

Effective Health Care Program

Technical Brief Number XX

Multidisciplinary Pain Programs for Chronic Non- Cancer Pain

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Technical Brief

Number XXX

Multidisciplinary Pain Programs for Chronic Non-Cancer Pain

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Preface

The Agency for Healthcare Research and Quality (AHRQ) conducts the Effective Health Care Program as part of its mission to organize knowledge and make it available to inform decisions about health care. As part of the Medicare Prescription Drug, Improvement, and Modernization Act of 2003, Congress directed AHRQ to conduct and support research on the comparative outcomes, clinical effectiveness, and appropriateness of pharmaceuticals, devices, and health care services to meet the needs of Medicare, Medicaid, and the State Children’s Health Insurance Program (SCHIP). AHRQ has an established network of Evidence-based Practice Centers (EPCs) that produce Evidence Reports/Technology Assessments, and Comparative Effectiveness Reviews to assist public- and private-sector organizations in their efforts to improve the quality of health care. Technical Briefs are the most recent addition to this body of knowledge.

A Technical Brief provides an overview of key issues related to a clinical intervention or health care service—for example, current indications for the intervention, relevant patient population and subgroups of interest, outcomes measured, and contextual factors that may affect decisions regarding the intervention. Technical Briefs generally focus on interventions for which there are limited published data and too few completed protocol-driven studies to support definitive conclusions. The emphasis, therefore, is on providing an early objective description of the state of science, a potential framework for assessing the applications and implications of the new interventions, a summary of ongoing research, and information on future research needs.

Transparency and stakeholder input are essential to the Effective Health Care Program. Please visit the Web site (www.effectivehealthcare.ahrq.gov) to see draft research questions and reports or to join an e-mail list to learn about new program products and opportunities for input. Comparative Effectiveness review will be updated regularly, while Technical Briefs will serve to inform new research development efforts.

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Abstract

Purpose

This Technical Brief is intended to describe the literature and identify important issues and gaps in the evidence base assessing Multidisciplinary Pain Programs (MPP) for the treatment of chronic, non-cancer pain—a condition affecting millions of Americans, seriously impacting their quality of life and costing billions of dollars every year.

Findings

MPPs have been extensively documented in the standard medical literature. The 183 papers considered in this Brief followed a biopsychosocial model of chronic pain, including treatment components in each of four areas: medical, behavioral, physical reconditioning, and education. Most of the studies were observational, before-after designs. Although several different clinical conditions were studied, 90 percent of the studies included chronic back pain, the most frequent condition addressed in the literature. Differences were apparent between studies based in the United States and those in Europe; recent European studies were more likely to include inpatient delivery of MPP treatment compared to U.S. studies. Declining access to MPP treatment is highlighted as a key issue faced by those in the community of chronic pain sufferers and researchers.

Background

Chronic Non-cancer Pain

Chronic pain symptoms cause major medical and socioeconomic problems and are the most common cause of long-term disability in middle aged people.¹ The total estimated healthcare costs to Americans are more than \$70 billion per year. Pain (of various types) is responsible for a half million lost workdays and costs more than \$150 billion annually in health care, disability, and related expenses in the United States.² The American Pain Society estimates that 9 percent of the U.S. adult population suffers from moderate to severe, non-cancer related chronic pain.³ However, epidemiological research has suggested that the prevalence of chronic pain varies, depending on how the survey questions are asked and how chronic pain is defined. Researchers have estimated that from 10 to 20 percent of adults report having chronic pain when defined as persistent pain lasting at least 3 months.² People who are 50 years of age and older are twice as likely to have been diagnosed with chronic pain when compared to people who are younger.² Chronic pain management will gain greater public interest as the population ages, and continued research in this field will be an important investment for the future health care of aging Americans.

Current Medical Practice as Related to Management of Chronic Pain

There are currently no definitive cures for the most prevalent chronic pain syndromes, such as back pain, upper extremity pain disability, peripheral neuropathies, etc. The goal of chronic

pain treatment has evolved from eliminating pain to managing pain to an extent that the patient's independence is restored and overall quality of life improved. This is the model of care provided by the MPP.* There is no single protocol for treatment provided in MPPs, but there is general agreement on some included methods. Through discussions with our Key Informants, we developed a definition of the MPP for the purposes of this Technical Brief. This definition is based on the presence in the treatment in question of each of four components: medical therapy, behavioral therapy, physical reconditioning, and education. Further detail and examples of these components are provided in Section D below.

Other treatment modalities used to deal with the many aspects of chronic pain include:⁴

- Pharmacologic treatment, such as nonsteroidal antiinflammatory drugs, antidepressants (primarily tricyclic compounds), anticonvulsants, ergotamine, antiemetics, serotonin receptor agonists, angiotensin-converting enzyme inhibitors, inhibitors, β -blockers, calcium channel blockers, opioids, and sedative-hypnotics. One or more of these medications may be indicated, for example, for arthritic, neuropathic or headache pain.
- Physical therapy, including transcutaneous electronic nerve stimulation.
- Occupational therapy.
- Behavioral/psychological therapy, including: pharmacological treatment for depression and anxiety, stress management training, relaxation training, cognitive behavioral therapy, operant therapy, and biofeedback.
- Vocational rehabilitation and disability management.
- Adjunctive treatment modalities, such as: trigger point injections, including muscle injections with botulinum toxin (Botox[®]); prolotherapy; nerve blockade procedures, such as sympathetic or epidural steroid injections; and acupuncture, and other complementary and alternative medical therapies.
- More invasive medical procedures, including: implantable infusion pumps or spinal stimulators, radiofrequency denervation, intradiscal electrothermal therapy, and spine surgery.

The multiplicity of treatment options has added complexity to health care decisionmaking for patients, providers, and payers. In addition, although there have long been guidelines and consensus opinion documents for treating acute and cancer pain, such guidance on therapy or combination of therapies for managing chronic noncancer pain has been less available.²

Chronic pain is neither adaptive nor self-limited. By definition, chronic, non-cancer pain has continued past its usefulness—it continues to encourage rest and limits on movement when those limitations impair healing. It persists long enough that the patient may find that side effects and dependence on narcotics limit quality of life. The pain is no longer a signal that something is wrong—it becomes a disease in itself, sometimes even after the original physical abnormalities are resolved.^{5,6} Chronic pain that continues after the apparent cause is gone is now thought to be best described as a biopsychosocial phenomenon. Though no one knows how the progression happens, it is thought to be influenced by factors such as acute pain intensity, depressive symptoms, and past trauma or stressful life events.⁵

* The MPP goes by many names in various literatures, including Interdisciplinary Chronic Pain Management (ICPM) and Interdisciplinary Pain Rehabilitation Programs (IPRPs). We chose MPP because it is more common.

The progression from acute to chronic pain is common: over 40 percent of people presenting in primary care for pain continue to experience pain a year later (Von Korff,⁷ quoted in Linton⁸). In the case of one disorder—low-back pain—approximately 90 percent of sufferers recover within 3 to 6 months (Mayer and Gatchel,⁹ quoted in Garofalo and Polatin¹⁰), leaving 10 percent experiencing chronic pain; the majority of those still experiencing pain after 6 months remain disabled after 1 and 2 years (Mayer,¹¹ quoted in Garofalo and Polatin¹⁰).

When chronic pain does not respond to treatments addressing the apparent cause, patients may be referred to a comprehensive treatment program such as an MPP, if one is available. However, not all chronic pain conditions follow this narrative of acute progressing to chronic pain. Fibromyalgia and some headache syndromes, for example, are not thought to be preceded by a musculoskeletal trauma or other acute event. Even so, these conditions are characterized by patients exhausting more traditional forms of pain treatment and are believed to be influenced by psychological and social factors and to be amenable to treatment in the MPP model. The studies identified in this Brief include trials of multidisciplinary treatment of fibromyalgia,¹²⁻²³ headache,^{15,24-28} and chronic widespread pain.^{13,21,29}

This Technical Brief should add to the literature on MPPs by describing the current evidence base on this treatment modality, highlighting gaps in the evidence, and outlining the key issues facing patients and practitioners considering treatment options for chronic, non-cancer pain.

Guiding Questions

The questions below guided the data collection for this technical brief. Question 1 lays the groundwork for the review by examining MPPs in the context of other treatments for chronic pain. Question 2 provides important background information on contextual factors affecting MPPs – such as reimbursement, current availability of such programs, and availability of practice guidelines. These issues contribute to variation in how chronic pain is managed. With the background provided by Questions 1 and 2, Question 3 focuses on the current evidence evaluating MPPs, using a specific operational definition of MPP. The variation across studies in how MPP is defined has contributed to confusion in this area of research; thus, a consistent operational definition of MPP is fundamental to this review. (Refer to Appendix A for further definitions of terminology and acronyms used in this report.) Given a consistent definition of MPP, we then describe: what populations were studied, the detailed components of the treatment program, and the health outcomes and harms that were measured in these studies. For studies in which a comparison treatment group was used, we note how the comparison group relates to the study treatment group with regard to any prior pain therapy. After reviewing the evidence to obtain a “lay of the land” for this body of literature, in Question 4 we explore the implications of further diffusion of MPPs, identify ethical issues, key areas of uncertainty and implications for research.

Question 1. The Existing Technology

What different types of comprehensive approaches to chronic pain management have been proposed or used in clinical practice?

- a. What are the theoretical advantages/disadvantages of these approaches when compared to current practice?
- b. What are the potential safety issues?

Question 2. The Context in Which the Technology is Used

- a. How widely available are MPPs; how widely are they used?
- b. What kind of staffing and what type of training is required or desirable?
- c. What is the role of accreditation with MPPs?
- d. What are other important contextual issues? (e.g., third-party payment, carve outs)

Question 3. The Current Evidence of the Technology

In studies examining the effectiveness of MPPs (defined as including medical, behavioral, physical reconditioning, and educational components) for adults with chronic non-cancer pain:

- a. What chronic pain populations (excluding patients with cancer) were included in studies of MPP?
 1. Patients with what clinical conditions were included?
 2. Had the patients already failed standard pain treatment? If so, what kind? Or were patients in the process of obtaining standard treatment for pain?
 3. How did the comparison group, if any, relate to the treatment group (e.g., on what characteristics were they matched)?
 4. What other inclusion/exclusion criteria (e.g., psychological or physical comorbidities, worker compensation status, third-party litigation status, active chemical dependency, etc.) were used?
 5. What patient characteristics (those not controlled by inclusion/exclusion criteria) have been tested for interactions with MPP that affect outcomes?
- b. Within a broad operational definition of an MPP requiring four components (medical, behavioral, physical reconditioning, and educational), what models (combinations of specific components) of an MPP for patients with chronic non-cancer pain have been studied with regard to effectiveness?
 1. With what alternative treatment was the MPP compared?
 2. What structure and process variables in MPPs that potentially affect outcomes have been tested in studies of MPPs? Examples include length of treatment (length of each session, sessions per week, number of weeks), group versus one-on-one sessions, in-patient versus out-patient treatment, pain medications, discipline of person who provided treatment, degree of coordination of services, staff turnover, emphasis of the program, and source of referrals to the MPP.
- c. What outcomes were assessed (short-term and long-term)?
 1. How were they measured?
 2. When were they measured?
 3. What patient characteristics (those not controlled by inclusion/exclusion criteria) have been tested for interactions with MPP that affect outcomes?
- d. What are the potential safety issues and harms that may be associated with an MPP? (i.e. what safety issues might occur as a result of combining different therapies, over and above the safety issues related to each individual therapy)?
- e. Other important study factors:
 1. What was the study design?
 2. What was the sample size?

3. How many patients were lost to followup (or dropped out)?
4. In what setting (in-patient or out-patient) was the study done?
5. In what country was the study done?
6. What was the funding source for the study?

Question 4. The Issues

What are the implications of further diffusion of MPPs, given the state of the evidence?

- a. What key decisional uncertainties face practitioners, payers, and patients?
- b. What are the implications for equity (e.g. geographic equity)?
- c. What do key decisionmakers (patients, physicians, payers) need to know?
- d. What are specific needs to make research in this area effective (e.g., design, definition of pain program, outcome assessment tools, etc.)?

Methods

We included information gleaned from discussions with key informants, targeted searching of the grey literature, reviews of various reference materials, and a comprehensive search of the peer-reviewed literature.

Discussions with Key Informants

We identified several key informants to provide expertise from various perspectives. We included MPP clinicians, third-party payers, consumers, and researchers. Key informants initially participated in discussions aimed at developing the guiding questions for the Technical Brief and provided leads to resources in the peer-reviewed and grey literature. These individuals and their affiliations are listed in Appendix B. Interviews were conducted via telephone or in person, during July and August of 2010. Information requested from each key informant varied based upon their area of expertise. Interview guides were developed in advance, including the topics and questions to be addressed with each group of informants; these guides appear in Appendix B, as well.

Grey Literature Search

Grey literature on this topic is less important, given the large peer-reviewed literature. However, where necessary, information from key informants and included studies and reviews was supplemented with grey literature, generally on consumer and payer perspectives.

Published Literature Search

We conducted literature searches in MEDLINE®, from 1985 to the end of May 2010. Searches were limited to studies relevant to humans and published in English. Restricting the research to English language materials was not expected to result in a language bias for this topic and stakeholders.³⁰ A search strategy designed for high sensitivity, rather than specificity, was used, due to the limitations of the Medical Subject Headings (MeSH terms) and the relatively

inconsistent use of terminology in this field. The search strategy used with Ovid MEDLINE®, including a concept analysis and proposed search terms, is described in Appendix C.

The articles were reviewed using exclusion and inclusion criteria. Articles that addressed acute pain, including chest pain, post-operative pain, etc., were excluded, as were studies that included pediatric populations. Articles that were not studies but addressed a question of interest in the background and context guiding questions were coded separately and retained.

The guiding questions included several areas of interest to be abstracted from the articles, including study design, setting, treatment components, and outcome measures. These data were extracted by one researcher into an Excel spreadsheet for analysis. Other researchers provided advice where design features were unusual or ambiguous.

Definition of Multidisciplinary Pain Program

We used the following definition of MPP in reviewing studies for inclusion. This definition was developed through discussions with our Key Informants and requires that each of the four components be included for a treatment program to be classified as an MPP. The components are described here along with examples:

- Medical therapy
 - Responsible for patient's physical wellbeing
 - Manage medications
 - Educational component may be included with medical (but research study must explicitly state this) e.g., neurophysiology education
- Behavioral therapy
 - Responsible for psychosocial aspects of patients' care
 - Cognitive Behavioral Therapy (CBT)
 - Operant Behavioral Therapy (OBT)
 - Stress management training
 - Relaxation, progressive muscle relaxation
 - Biofeedback
 - Comorbidity diagnosis and treatment
 - Help patient unlearn maladaptive responses to pain
 - Problem solving
 - Individual or group psychotherapy
 - Educational component is often included with behavioral (but research study must explicitly state this)
- Physical reconditioning
 - Physical Therapy (PT) or Occupational Therapy (OT)
 - Graduated activity exposure (pacing) enabling patients to control exacerbations in pain by learning to regulate the activity and, once a regime of paced activity is established, to gradually increase their activity level
 - Graded therapeutic exercises to safely increase functioning (e.g., flexibility, range of motion, posture, body mechanics, ambulation, gait training, core strength/stability, cardiovascular fitness)
 - Passive modes (e.g., ultrasound, electrical stimulation, massage) are generally avoided in MPP and focus is teaching patients independent management of pain
 - Stretching and strengthening emphasized

- Job analysis and reconditioning
- Educational component is often included with physical reconditioning (but research study must explicitly state this), e.g., back education
- Education
 - Improved self management is the focus
 - Educational component is sometimes integrated with one or more other components (e.g., by psychologist with behavioral component, by nurse with medical component, by PT with physical reconditioning component)
 - Back education
 - Home exercise training
 - Ergonomic training
 - Neurophysiology education provided by a physician or nurse

Appendix D contains details of the 183 included studies in tables addressing comparison treatments, length of followup, outcomes measured, and other study design information.

Findings

This section addresses the context in which the MPP is used and the current evidence base on this treatment, focusing on the topics included in Guiding Questions 1 through 3. These topics are called out with bolded or italicized paragraph headings. (Guiding Question 4 is addressed in the summary.)

Description of Technology and Context for Use

Accreditation. Accreditation is not centralized for MPPs, at least in part due to the broad range of programs and treatment options available. The definition used in this Brief is one view of MPPs, but there are others possible, both more and less stringent. That said, the most frequently mentioned accreditation program is the Commission on Accreditation of Rehabilitation Facilities' (CARF) Interdisciplinary Pain Rehabilitation, which covers both outpatient and inpatient programs, in- and outside the United States. The other frequently mentioned program is the American Academy of Pain Management's Pain Program Accreditation, which includes a category of Comprehensive Multidisciplinary Program.³¹

Availability of programs. MPPs are available in a variety of settings—international outpatient and inpatient hospitals, rehabilitation facilities, and academic medical centers. As of 2005, there were 84 pain programs in the United States accredited by CARF (a leading accreditor of this field) as Interdisciplinary Pain Rehabilitation Programs.³² A recent search on the CARF website yielded just 64 programs in the United States (including Puerto Rico), with over half of those located in Texas, leaving much of the rest of the country without coverage.³³ However, there are MPPs in the United States that are not accredited by CARF. According to Schatman,³² one estimate of the total number of MPPs in the United States in 2005 was 200, of which 84 were CARF accredited. If this ratio remains valid, there may be approximately 150 MPPs remaining in 2010.

Staffing. Staffing in MPPs varies by center; however, given our definition, each would have at least one physician or nurse, a psychologist or other behavioral therapist, and a physical or occupational therapist. Any of these professionals could provide the education component. CARF accreditation requires that the treatment team include physicians, psychologists, and

physical therapists.³⁴ Several authors have outlined possible staffing models for MPPs.^{32,35-37} One important factor is that the professionals on the team are specifically trained in the care of chronic pain patients, which follows a different care model from both acute pain and non-pain rehabilitation. For example, Schatman notes that the traditional passive modes of treatment physical therapists are trained to use with acute pain patients are inappropriate in the MPP setting.³² With chronic pain patients, therapists must address both behavioral and emotional sequelae of longstanding pain that stand in the way of successful outcomes. In addition, staff of MPPs need to work together closely as a team. In fact, at least one study has found that treatment is less successful when one component is “carved out” due to insurer policies—that is, when one part of the treatment is provided outside the program, out of contact with the rest of the team.³⁸

Other treatments. Other treatments for chronic pain include partial MPPs, which have some but not all of the components, and procedure-based practices, including such interventions as nerve blocks, discectomy, etc. Though the MPP is seen as the last resort for intractable pain, it is fundamentally a conservative treatment: other treatments are not necessarily more safe or more effective. Many patients have already exhausted other procedures and less intensive treatment options when they come to the MPP. Even if a patient has not responded to the components when presented separately, advocates of MPP treatment note that there is additional value to providing all four treatment components at once.

Advantages of integrated treatment The MPP is thought to improve on unimodal treatments by simultaneously addressing the multiple influences on chronic pain in the biopsychosocial model.³⁹ It is also a conservative treatment option that causes few if any adverse effects (see below), especially when compared to surgery or long-term opioid therapy.

Adverse effects and disadvantages. Few, if any, studies mentioned adverse effects due to MPP treatment. One study included an adjunctive heat treatment delivered in a confined sauna-like device; one participant had to withdraw from the treatment due to claustrophobia.⁴⁰ Treatment protocols that include invasive procedures such as nerve blocks would presumably carry the risks following from those procedures, but there was no indication in the literature of additional risks from combining the different treatments. In a comparative review of the evidence relating to several common chronic pain treatments, Turk and Swanson⁴¹ conclude that all treatments considered have possible iatrogenic complications, “perhaps with the exception of MPRPs (Multidisciplinary Pain Rehabilitation Centers).”

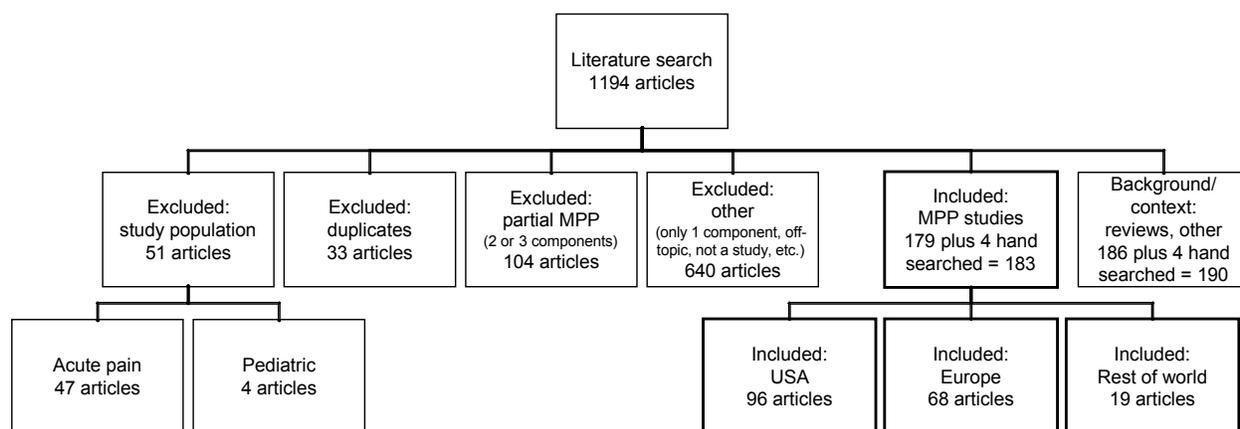
Many studies did, however, report some information about attrition (dropping out of treatment), which is generally quite high: ranging from 0 to 48 percent (comparable to the 5 to 46 percent found in one literature review.)⁴² The average attrition for those studies reporting drop-out rates was 11 percent; the median was 9 percent. Attrition could be a marker of an adverse effect as some patient-initiated withdrawal from treatment may be due to increased pain or stress.

Other than as noted, no adverse effects were identified in the literature.

Evidence Map of Multidisciplinary Pain Programs

The literature search yielded 1194 articles in total. The disposition of those articles is shown in Figure 1.

Figure 1. Literature search



The literature on MPPs is extensive. Even with the relatively stringent requirements of including each of the four definition components, over 180 papers were found, representing approximately 160 different experiments or observational trials.* These studies were based in 18 different countries. Approximately half of the papers included (96) were located in the United States. The majority of the remainder was conducted in Europe/United Kingdom (68). A variety of public health contexts are represented by the study countries. This could be important for the outcome of MPPs for a variety of reasons, including access to treatment at the subacute stage, payer policies on behavioral and psychological care, coverage of workplace ergonomic interventions, and the effect of a stronger social safety net, which some researchers have hypothesized may affect chronic pain sufferers’ motivation to return to work.⁴³

Where possible, studies were coded with the name of the treatment center. In several cases, although the study did not state where treatment was provided, it was possible to make an educated guess based on author affiliations and similarities to other studies published from the same treatment center. A total of 85 treatment centers were identified or attributed in the included studies.[†] There were an additional 12 treatment centers that could not be readily identified.

A few treatment centers have been extensively documented in the literature. The most notable is the PRIDE center in Dallas, Texas. The treatment program that originated there, known as Functional Restoration,^{9,44} has been influential in shaping the offerings at many of the other treatment centers included in this Technical Brief. There were 27 papers directly attributed to PRIDE.

Patient populations. Almost by definition, since those they treat have pain that has progressed from acute to chronic, most MPPs are treating patients who have failed to gain relief from multiple prior treatments. Some studies specifically noted that they are treating the patients with the most intractable chronic pain. Some noted that they do not place many restrictions on the incoming patients based on things like litigation status or most mental health diagnoses.

* Unless otherwise noted, in this Brief “study” refers to an individual paper, rather than an experiment or observational trial.

[†] Where possible, treatment centers that have changed names over the years were combined into a single entry for the purposes of this analysis; in addition, treatment centers with more than one program offering were combined into a single entry as well: for example, the Royal North Shore Hospital in Sydney offers a version of its ADAPT program specifically for patients with permanent paralysis due to spinal cord injury, which is known as SpinalADAPT. These two programs were presented here as a single entity.

Others require that patients explicitly accede to the treatment philosophy at the center, sign treatment contracts, and be treated for comorbid substance abuse before starting the program. Exclusion criteria have been abstracted from the included studies in the Brief and are presented in Appendix D, Table D1.

Turk and Stacey³⁷ report that between 5 and 54 percent of patients evaluated for treatment in MPPs are turned away, depending on the study. Generally, it is in all parties' best interests to offer treatment only to those who are most likely to benefit—especially in the case of MPP treatments, which require a significant investment of time and energy from the patient and providers, as well as a large financial investment from the payer. In reviewing the most common exclusion criteria, however, Turk and Stacey note that the evidence may not support some of the more frequent bases for refusal, including age, litigation status, and psychological factors.

Many experts on chronic pain have noted that the U.S. system of disability determination can adversely affect patient prognosis. “The work of Crown⁴⁵ suggests that psychological aberration is acquired as a consequence of negotiating the gauntlet of disability determination for Workers' Compensation. . . . This ostensibly ethical insurance paradigm is iatrogenic. It is hard, if not impossible, to get well if you have to prove you are sick.”⁴⁶ In other words, a psychological disorder may be a predictable sequela of the process of obtaining financial coverage for treatment. Seeking or receiving compensation for injuries may be labeled secondary gain and used as a reason to deny treatment. However, at least in the United States, Workers' Compensation insurance offers among the least restricted reimbursement programs for MPP treatment, making occupational injuries especially common diagnoses in these treatment programs and the studies assessing them.

Conditions/diagnoses studied. The identified studies included both studies focused on a single diagnosis or clinical condition, and studies of heterogeneous chronic pain populations. Around half the studies (90 out of 183) included multiple pain conditions, thus including people with very different etiology and clinical courses, generally giving the proportion of the patients with pain in various locations.

An additional 93 studies focused on a single condition, 85 percent of these on back pain. Some of the single condition studies used standard diagnostic categories like Fibromyalgia. Others used criteria that encompass the presumably similar psychosocial experience of, for example, Chronic Occupational Spinal Disorders—patients who were injured at work somewhere along their spine (including cervical, thoracic, and lumbar locations).

The most frequent diagnosis reported in these studies was back pain of some type, generally chronic lower back pain, with 96 studies, plus an additional 16 studies on spine pain, and eight on neck or back pain. Overall, 90 percent of studies included some back pain patients. After back/spine pain, the next most frequent diagnosis was an indeterminate category of “varied/chronic pain,” with 29 studies. Thirteen studies explicitly included patients with fibromyalgia or chronic widespread pain; six studies noted inclusion of headache disorders. No studies specifically studied post-herpetic neuralgia, though these patients were likely included in the “heterogeneous chronic pain” groups, e.g., Wang et al.,⁴⁷ who included post-herpetic neuralgia in their list of conditions. Jaw pain (craniomandibular and temporomandibular disorder) was the focus of two studies.

Study design: comparison treatments. A minority of studies included a comparison treatment: 67 (37 percent) had at least one comparison treatment (Table 1). Of those studies that included multiple treatments, 36 percent assigned the treatments randomly. This translates to 24 studies with multiple, randomly assigned treatment groups. Three of these used comparison treatments

that also met our MPP criteria, so they were not strictly trials of MPP efficacy. Six of the studies included a randomly assigned waiting list condition, five included a randomly assigned no treatment or usual care (outside the MPP) condition.

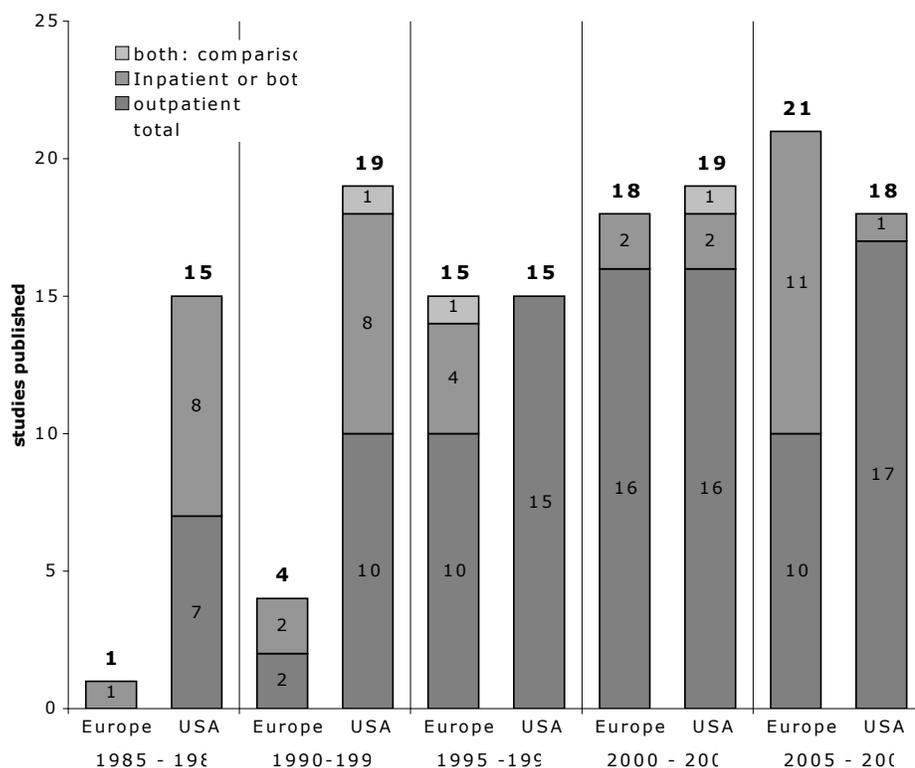
Table 1. Comparison treatments

Comparison Treatment Studied	N	% Random Assignment to Treatment
No comparison treatment	116	N/A
Comparison treatment (all)	67	36%
Alternate treatment		
Alternate treatment: Non-MPP	17	65%
Alternate treatment: MPP	12	25%
No alternate treatment		
No treatment and non-completers	14	7%
Combination/multiple		
Usual care or waiting list	14	14%
Non-MPP treatment and no treatment	5	60%
MPP treatment and waiting list	4	75%
MPP and non-MPP treatments	1	0%
Total	183	

Of the 42 studies including nonrandomly assigned comparison groups (one study did not state whether comparison treatments were assigned randomly) 18 used an active treatment condition (eight included a non-MPP treatment, nine included an MPP treatment, one study included both), the rest used only nonactive comparators (waiting list, usual care, or no treatment).

Inpatient/outpatient treatment. Between 1985 and 2004, there seems to have been a trend away from inpatient treatment programs toward outpatient models, at least in the published literature. This trend is consistent with key informant input suggesting that payers were becoming increasingly reluctant to pay for more expensive inpatient programs. Since 2005, publications appear to show an increase in inpatient programs in Europe (Figure 2). Three studies directly compared the effectiveness of inpatient versus outpatient treatments.⁴⁸⁻⁵⁰

Figure 2. Treatment settings by program location



Note: For simplicity, Australian, Asian, and Icelandic studies are not shown, nor are “other” study designs, which include residential programs and programs where some patients were inpatient while others were outpatients; data from partial year 2010 is not shown.

Measurements and outcomes. A large number and range of outcomes were assessed by the included studies. These measures ranged from Visual Analog Scales of pain intensity to degrees of lumbar extension and flexion to a variety of return-to-work measures. The most important outcome domains for chronic pain clinical trials were identified by the Initiative on Methods, Measurement, and Pain Assessment in Clinical Trials (IMMPACT), which is a multidisciplinary group of pain researchers, government health officials, and other stakeholders that produced consensus statements on outcome measures and other design features of clinical trials of pain treatments. Core outcome domains recommended by IMMPACT include:

- Pain (including intensity, location, specific descriptors and qualities).
- Physical functioning (including ability to carry out activities of daily living, muscle strength and endurance, disease-specific measures).
- Emotional functioning (including distressed mood due to pain, including depression, anxiety, anger, and irritability).
- Participant ratings of global improvement and satisfaction with treatment (including participants’ expectations about and satisfaction with treatment: whether the positive outweighs the negative attributes of the care).
- Symptoms and adverse events (including drug side effects, onset of new disease, addiction).

- Participant disposition (including starting with all patients screened, how many enrolled, how many dropped out, how many were lost to followup; includes reasons for not enrolling/dropping out, etc.).

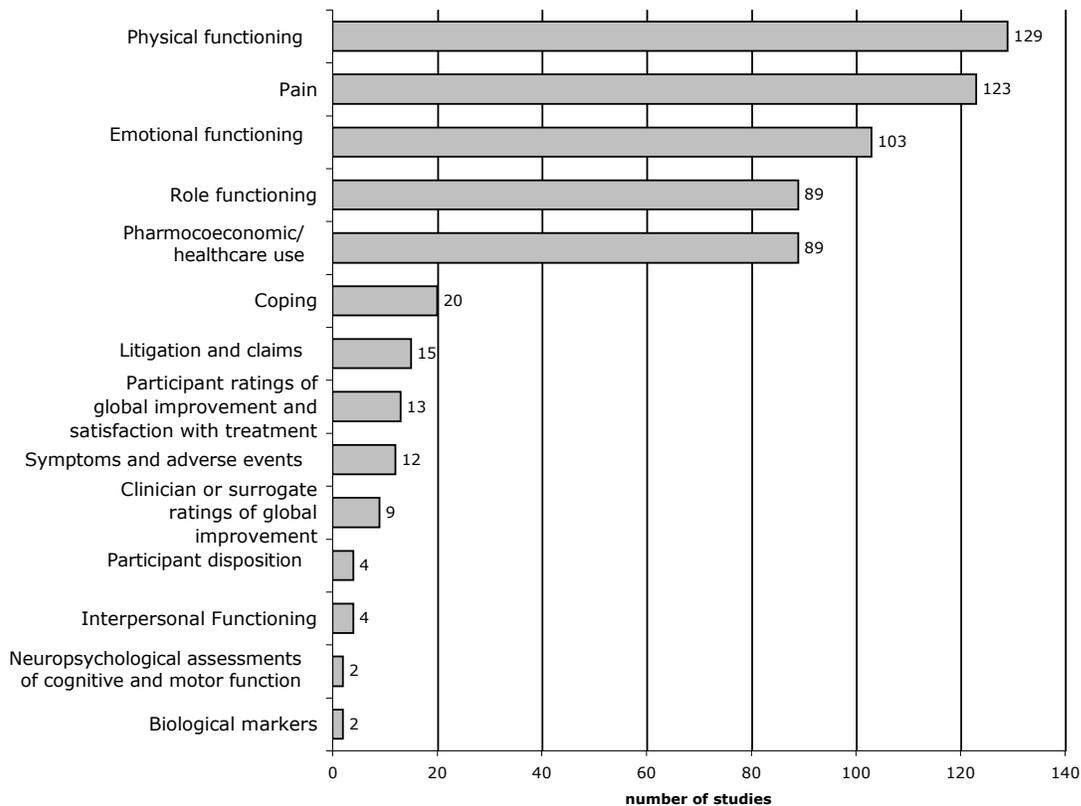
Supplemental IMMPACT recommendations include:

- Role functioning (including work and educational activities; includes return to work).
- Interpersonal functioning (including relationships and activities with family, friends, and others).
- Pharmacoeconomic measures and health care utilization (including additional surgeries, care sought from a new provider, number of doctor or emergency room visits for pain).
- Biological markers (including assessments based on quantitative sensory testing, imaging, biopsy).
- Coping (see Boothby et al.⁵¹ for importance of coping concept in chronic pain).
- Clinician or surrogate ratings of global improvement (including assessments of treatment providers, spouse, etc.).
- Neuropsychological assessments of cognitive and motor function (including memory, executive function, reaction time).
- Suffering and other end-of-life issues.

(Adapted from IMMPACT consensus statement.⁵²)

Figure 3 illustrates the number of studies that reported an outcome in each domain. In addition to the IMMPACT domains, we used one additional category, litigation and claims, that frequently recurred in the included studies. It covers whether the subject had any outstanding litigation or unresolved workers' compensation claims. The most frequently measured domain was physical functioning, with 70 percent of the studies reporting at least one physical functioning outcome. Almost as many studies reported a pain measure outcome. The single most frequently used measure was a visual analog scale (VAS). This is generally presented as a 10 cm line, with the ends labeled; if it were measuring pain intensity, the labels might be "no pain" and "the worst pain imaginable." The person completing the VAS indicates where on the line his or her pain falls. The researcher or clinician then measures where the mark falls and reports it as the length of the line—for example, 50 mm for a mark halfway along the line. A VAS is often used to record pain intensity, but can also be used for other things: anxiety, pain interference with daily life, etc.

Figure 3. Outcome domains measured in included studies



Followup periods for these studies were generally short, with 116 of the 183 studies reporting 0 to 6 months of followup; one-third of the studies (62) reported only before and after data—that is, there was no followup reported after discharge from the program. Ten studies reported followup periods of at least 36 months.

Other study factors. Sample sizes in the included studies ranged from 1 (a case study) to 2730. The average sample size was 263. Several of the studies reported many participants lost to follow-up, particularly over longer tracking periods. The average loss to follow-up was 20%; the maximum was 87%, which was for the 12-month follow-up data point in a study with a large treatment cohort (748 began treatment).

This overview of the literature on MPPs suggests that study design is a key weakness in the evidence base. A majority of the studies had no comparison population, making causal inference more difficult. In addition, the continuity or persistence of treatment effects is difficult to estimate based on existing studies because of large numbers of participants lost to followup and attrition.

Summary and Implications

There is a substantial literature on MPPs, which, despite some weaknesses, does include randomized trials of effectiveness compared to other conservative treatments. Researchers in the field seem to have largely accepted that the treatment works, at least in certain populations or models of delivery.^{34,41,53-55} Still, the number of programs in the United States is decreasing rapidly.

Decline in access. Several factors have been implicated in the decline in the number of MPPs in the United States (the number in other countries may actually be growing³²). Meldrum⁵⁶ identified three dichotomies that have held the MPP back from being the “recognized standard of care in the United States”: (1) disciplinary collaboration in MPPs versus the “discipline-segmented organization of major medical centers,” (2) collaborative care in MPPs versus the fee-for-service model of healthcare payments, and (3) rehabilitative treatment in MPPs “focused on individualized assessment and patient behavior change” versus the curative medical model of treatment. In each of these dichotomies, the MPP model runs counter to the prevailing architecture of American healthcare financing and provision. Meldrum’s first dichotomy draws attention to the requirement in an MPP of significant integration of care across several disciplines; major medical centers are aligned in silos by field and are increasingly competitive with each other for resources, including patients, floor plan, and research dollars. Her second dichotomy points to the difficulty MPPs have getting adequate reimbursement for the time-intensive assessments and collaborative meetings needed to provide intensive multidisciplinary treatment. The pervasive fee-for-service model preferentially rewards procedures like nerve blocks and discectomies over assessments and behavioral therapy. Meldrum’s third dichotomy is driven not just by healthcare payers and providers, but also by patients themselves. It is perhaps inevitable that a person in pain would seek a cure from a surgeon or a pill over the intensive cognitive and behavioral changes required by an MPP.

Gatchel and his colleagues⁵⁷ note the difficulty those involved with MPPs have faced trying to “sell” this treatment model to major stakeholders, including payers, legislators, etc. They posit that “many chronic pain clinicians were never trained in the requisite skills needed for dealing with the major forces/stakeholders. . . . [T]he vast majority of chronic pain practitioners have not yet developed the ‘political savvy’ to advocate for their patients and their profession.” They offer some suggestions for arguments in favor of their model, including the “serious bioethical issue” when third-party payers refuse to cover MPP treatment or carve out portions of the model (see below), “seriously compromis[ing] the integrity and effectiveness” of the treatment and raising “significant medicolegal and ethical concerns.”

The medical director of large insurance company Aetna, Dr. Jeff Livovich, has stated that MPPs have not done enough to make payers aware of the benefits of their programs, in efficacy and cost-effectiveness. “My perception is that third-party payors could benefit from a greater understanding of what interdisciplinary care is about. . . . For now, when people think of pain medicine they think of interventional techniques.”^{58‡}

Carve-outs and third-party payment issues. Gatchel and colleagues⁵⁷ provide a succinct explanation of the issue of carve-outs in third-party reimbursement policies.

[I]nstead of authorizing full multidisciplinary pain management programs, MCOs [Managed Care Organizations] have been “carving out” portions of comprehensive, integrated programs (i.e., sending patients to different providers for their various needs outside of the comprehensive pain management programs), thus diluting the proven successful outcomes of such integrated programs in an effort to cut costs.^{38,59,60} While MCOs may be most guilty of compromising the integrity of chronic pain management services, it is important to note that *all* health-insurance carriers manage health care to a certain degree, and accordingly share in the responsibility for the provision of suboptimal care. They lose sight of the fact that, in the long run, multidisciplinary programs that help chronic pain patients resume

‡ The original used the acronym “IPRPs”—interdisciplinary pain rehabilitation programs—another name for MPPs.

productive lives produce much greater long-term cost-effectiveness in terms of future health care, tax, legal, and general economic factors.

Schatman³² challenges the efficiency of carve-outs referring readers to Gatchel's work on the topic of carve-outs to note that the practice has "paradoxically produced the effect of steering patients away from multidisciplinary treatments that demonstrably reduce health-care utilization, and toward more extensive unimodal therapies associated with poorer outcomes."⁵⁷

According to the experts we consulted, the treatments most likely to be carved out from an MPP are physical therapy and psychological/behavioral treatments. Managed care organizations may have preferred networks of providers for these services to which they direct their beneficiaries—particularly since both PT and psychological treatments are generally pursued during repeated visits over long periods of time.

In the context of Workers' Compensation insurance, there may also be a need to document that psychological treatment provided in an MPP is addressing issues caused by the workplace incident, rather than pre-existing conditions that would not be covered.

Role of opioids. There is no consensus among MPP providers on the appropriate role of long-term opioid therapy for people with chronic pain. Many MPPs have a policy of tapering patients off opioids when (or before) they begin treatment (see Table D2 in Appendix D for examples under "Medical component"). The chief of pain medicine at the University of Washington Medical Center, Dr. Alex Cahana, was involved in drafting legislation in Washington placing further controls on physicians prescribing opioids for patients with chronic, non-cancer pain. Cahana was quoted in the press saying, "This is not just about addicts but little old ladies with arthritis starting to die because of this kind of medical practice." Because opioids are controlled substances, they are subject to federal, as well as state regulation and oversight in prescribing and dispensing. Passik⁶¹ notes that "[p]hysicians who prescribe opioids must maintain extensive documentation and may be subject to investigation by the Drug Enforcement Administration."⁶²⁻⁶⁴ Still, Ballantyne notes that "many practitioners have been able to improve the lives of patients with debilitating chronic pain using carefully structured opioid therapy."^{65,66}

Patient-related issues. Inherent in the biopsychosocial model of pain is the unfortunate (and inaccurate) implication that the continued pain is somehow the patient's fault. In physician language about a patient's history of treatment, the stock phrase is that the "patient failed" X or Y treatment. Surgeons may refer to an unsuccessfully operated patient as a "failed back" (of this tendency to reduce patients to their problems, one chronic pain patient noted, "It had always seemed that I, as a person, was just along as transportation for whatever body part was the focus of the appointment that day"⁶⁷). Patients may feel that the frustrated physicians treating them under the curative model feel that they are malingering or purposely exaggerating their symptoms. Lebovits addresses the difficult interaction between psychology and pain, noting that it can be difficult to tell which came first, and that the two can interact to the patient's detriment.

Individuals experiencing chronic pain can also exhibit significant psychopathology that might have existed premorbidly but also may be reactive to pain and/or the lack of relief and exacerbated by iatrogenic or traumatic injuries. . . . The result of this concurrent psychopathology is that the patient's pain might not be taken seriously enough. The patient might be dismissed as "crazy" and their pain as "in their head," which might result in not being treated at all or not being treated medically, just psychiatrically. Alternatively, they might be treated overly aggressively medically in that their depression or somatization disorder might just amplify their pain or their suffering or illness behavior.⁶⁸

At least historically, some physicians have believed that pain with a psychological component is in the patient's control. As quoted in Meldrum,⁶⁹ William Livingston, a surgeon in Oregon (1892-1966), "fiercely refused to 'deny such cases an organic basis and to ascribe the symptoms to psychic causes for which the patient may be responsible.'"⁷⁰

A more accurate description of the psychosocial factors in the biopsychosocial model of pain is as part of a complex system in which there is "a dynamic and reciprocal interplay among biological, psychological, and sociocultural factors that shapes the experience and responses of patients."^{71,72}

Study design. The literature includes relatively few RCTs. Several authors noted ethical issues prevented them from using random assignment to treatment (see examples⁷³⁻⁷⁷). The studies which did randomize participants were nearly all based in Europe (only three were based in the United States and three in Australia).

The comparison/control groups in the nonrandomized studies were often convenience samples—for example, of those who dropped out of treatment or who were accepted to the program, but never began treatment—and likely to introduce bias. Waiting list controls in programs with capacity constraints may be the best solution when randomization is not feasible.

Not all researchers in the field believe that randomization to treatment protocols is ideal. For example, Currie and colleagues,¹⁵ among others, note that an RCT design is "neither feasible nor desired" for their needs. They are concerned about the likely exclusion from randomized trials of patients with the typically complicated clinical profile of comorbidities and long treatment histories, as well as the potential bias associated with relying on patients volunteering for randomization.

Another possible source of bias is the outcome assessments, which are frequently completed by the treatment team or another nonblinded person. A few studies did use blinded assessors (examples⁷⁸⁻⁸¹). High attrition, especially over the long-term followup periods may also bias outcome assessments.

A more difficult issue to control is referral bias. As noted, MPPs are often seen as the last resort for patients whose pain has not responded to multiple prior treatments. These patients may not be representative of the larger chronic pain population; for example, they may be unusually persistent to have continued to seek treatment after multiple failed attempts to cure their pain. Turk and Rudy⁴² considered several aspects of referral bias, noting that epidemiological studies have found that specialty pain clinic patients show signs of greater emotional function impairments compared to chronic pain sufferers in the community or being treated in general practice. Generally, Turk and Rudy note that patients seen in pain clinics tend to be more difficult to treat than the general pain population.

Next Steps

There are several reviews of the current body of research on efficacy of MPPs as treatment for chronic, non-cancer pain (examples^{1,2,82-89}). These reviews include discussions of efficacy in various pain conditions, populations, and treatment modes.

The literature review and interviews we conducted highlighted a number of areas for future research design consideration:

- On the payer side, we have noted from discussions with Key Informants and the grey literature that more detailed information addressing cost-effectiveness is needed. For example, information on which patients are most likely to be helped by MPPs, when

- it is possible to determine that a patient is not responding to treatment and would benefit from a change, and when patients should be referred to MPPs for treatment (e.g., degree of chronicity, which treatments should be attempted first, etc.).
- Given the high rates of treatment attrition and refusal in some programs, attention should also be paid to options for patients who are refused MPP treatment or who do not experience relief, since the MPP is often the treatment of last resort.
 - Certain outcomes have been noted to be of special interest to payers, including return to work, which is problematic to define—full-time or part-time? in the same job or a different job? what timeframe should be used?—but worth considering nonetheless, especially for disability and workers’ compensation insurers.
 - Information about the decrease in the number of programs and the structural support needed to increase access to MPPs would be of interest to legislators and regulators, who may be able to provide special incentives to support these programs.
 - The small number of RCTs should ideally be supplemented with additional randomized studies in the United States, since most of those currently available were conducted overseas, in very different public health and occupational contexts.

There is one ongoing U.S. RCT by Gatchel et al.,⁹⁰ which compares random assignment of MPP treatment to usual care (“standard anesthesia pain clinic medical care”) in 66 active-duty military personnel matched on age, gender, race, and time since onset. Because their subjects are in the military and were selected to have at least 18 months remaining in their service obligation, the researchers were able to obtain 100 percent followup over a relatively long period. This study overcomes some of the design difficulties others have faced; however, it may be of limited applicability to the civilian population (and indeed was meant to specifically address “the enormous costs associated with chronic musculoskeletal conditions within the U.S. Armed Forces”).

In practice, finding appropriate control groups for studies of chronic pain patients is problematic. As noted above (“study design”), several researchers have identified ethical issues with waiting list controls. Avoiding selection bias is difficult without a centralized health system that catalogs all patients experiencing chronic pain. The diversity among third-party payers’ reimbursement policies for MPP treatment further complicates selection issues. As a result, most U.S. studies are essentially convenience samples of patients referred to the clinic, accepted for treatment, and approved for reimbursement.

The most pressing problem facing the MPP, as we heard from our Key Informants, is the declining access to MPPs in the United States. The factors causing these programs to close will not be overcome by even the largest, most perfectly designed and implemented study of efficacy. Reimbursement policies are often not tied to any evidence of relative efficacy between quick procedures and much longer multidisciplinary treatments. Without a change in these policies, MPPs may soon be extinct, however effective they are proved to be, and however much they may be needed by the large and growing number of chronic pain sufferers.

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Appendix A. Terminology and Abbreviations

Terminology

Multidisciplinary Pain Program (MPP): The multidisciplinary model of chronic pain treatment is based on the biopsychosocial model. This model emphasizes the complex and dynamic interaction between physiological, psychological, and social factors that serve to perpetuate and potentially worsen the pain experience. In contrast to the biomedical model, which emphasizes cure or at least elimination of a significant amount of pain, the goal of multidisciplinary pain programs is to restore the patient's independence and overall quality of life (i.e., rehabilitation). An MPP includes the following four components: education, medical treatment, behavioral therapy, and physical reconditioning.

Partial Multidisciplinary Pain Program (Partial MPP): A Partial MPP includes two or three, but not all four of the following components of an MPP: education, medical treatment, behavioral therapy, and physical reconditioning. In addition, the Partial MPP must be fundamentally rehabilitation in focus, i.e., the goal of the program is to restore the patient's independence and overall quality of life.

Abbreviations

CARF	Commission on Accreditation of Rehabilitation Facilities
CBT	Cognitive Behavioral Therapy
ICPM	Interdisciplinary Chronic Pain Management
IMPACT	Initiative on Methods, Measurement, and Pain Assessment in Clinical Trials
IPRP	Interdisciplinary pain rehabilitation programs
MCO	Managed Care Organizations
MeSH	Medical Subject Headings
MPP	Multidisciplinary Pain Program
MPRP	Multidisciplinary Pain Rehabilitation Centers
OBT	Operant Behavioral Therapy
OT	Occupational Therapy/Therapist
PT	Physical Therapy/Therapist
VAS	Visual analog scale

Appendix B. Key Informants and Potential Questions

Key Informants

Name	Affiliation	Recommendation and Topic Area
Miles Belgrade, MD	Fairview Pain & Palliative Care Center	Recommended by EPC team Pain Program Medical Director Local content expert
Penney Cowan	American Chronic Pain Association (ACPA)	Recommended by SRC Consumer advocate, Executive Director of ACPA Patient with chronic pain who has experience with MPP
Debra Drew, MS, RN	University of Minnesota Medical Center, Fairview	Clinical Nurse Specialist for Pain Management Local content expert
Alex Malter, MD, MPH	Medicaid Medical Director Alaska	Recommended by SRC Public payer perspective
Nina McIlree, MD	Zurich Services Corporation, Medical Director and Vice President of Medical Management Services	Recommended by Dr. Stanos Former attending physician at Rehabilitation Institute of Chicago; currently medical director for Work Comp
John Mullen, PhD LP	Fairview Pain Management Center	Pain Program Psychologist Local content expert
Steven Stanos, DO	Rehabilitation Institute of Chicago Center for Pain Management	Recommended by local content experts Pain Program Medical Director National content expert, researcher American Pain Society leader
Dennis Turk, PhD	University of Washington	Recommended by local content experts National content expert, researcher American Pain Society leader
Consumer 1		Patient with chronic pain who has experience with MPP
Consumer 2		Patient with chronic pain who has experience with MPP

Guiding Questions for Key Informant Interviews

<p>Third Party Payer Perspective:</p>	<ol style="list-style-type: none"> 1. How do you define MPP (Multidisciplinary Pain Programs) eligibility for reimbursement as such? 2. What do payers view as the advantages/disadvantages of MPPs? 3. How do coverage policies impact the therapy components of MPPs? 4. How does coverage impact patient access to MPPs? 5. Are certain therapies for chronic pain more likely to be reimbursed by payers than others? If so, which therapies? <ol style="list-style-type: none"> a. We have heard that some payers may be less likely to reimburse “mental health” services, but are willing to pay for “behavioral therapy” services. Have you found this to be true? What is the reasoning behind this difference? 6. Is the managed care practice of separating out certain components of an MPP – i.e., “carve outs” - (e.g., PT or psychological services) increasing? If so, why? 7. Is third party reimbursement for MPP becoming more or less restrictive? 8. What information about MPPs is most needed by payers in making coverage decisions? 9. What research questions (related to MPPs) would be most useful to payers? In studies evaluating the effectiveness of MPPs, what patient outcomes would be most useful or helpful to payer decisionmaking?
<p>Consumer Perspective</p>	<ol style="list-style-type: none"> 1. What has been your experience with Multidisciplinary Pain Programs (MPPs)? <ol style="list-style-type: none"> a. What approaches had you tried before going to a MPP? b. How did you hear about it? 2. What did your MPP consist of? Which components were included: Physical therapy? Medical? Behavioral/psychological? Educational? (See Table on next page for examples of pain therapies). How long did you use the MPP? 3. In what way(s), if any, did the MPP improve your ability to function? 4. What were your expectations or goals for yourself in seeking care at the MPP? What were you hoping to achieve? Were your expectations/goals met? Why or why not? 5. What would you consider “success” for a patient in a MPP? 6. What do you view as the advantages/disadvantages of MPP? 7. What component, if any, of the MPP did you find most helpful to you? And what component, if any, was least helpful? <p>Information needs for patients</p> <ol style="list-style-type: none"> 8. What information about MPPs would help you or other patients make a decision about seeking care at an MPP? <p>Insurance coverage</p> <ol style="list-style-type: none"> 9. Did you have any problems with reimbursement or coverage from your insurance company?
<p>Expert Perspective (Researchers and Clinicians)</p>	<p>Patient access and referrals</p> <ol style="list-style-type: none"> 1. How available are Multidisciplinary Pain Programs (MPPs) to patients trying to access them? What are the barriers? 2. What is your sense about MPPs increasing or decreasing in number? (based on what?) 3. Are community physicians generally aware of MPPs? 4. What criteria are used to decide to refer patients to MPPs? 5. In what ways could the referral process to MPP be improved? <p>Reimbursement issues</p> <ol style="list-style-type: none"> 6. How do payment rules or payer policies affect the therapy components of MPPs? (Table below) 7. Regarding the managed care practice of separating out certain components of an MPP – “carve outs” (e.g., PT or psychological services):

	<ul style="list-style-type: none"> - What is the impact of this practice on patients? What is the impact on MPPs? - Is this practice increasing? If so, why? <p>Administration and design of MPPs</p> <ol style="list-style-type: none"> 8. What type of staffing is desirable for an MPP? 9. What type of staff training is desirable for an MPP? 10. What role, if any, do accreditation programs have with MPPs? (e.g. AAPM) <p>Patient experiences</p> <ol style="list-style-type: none"> 11. What is the main MPP “critique” received from patients, especially those who “drop out”? <p>Research</p> <ol style="list-style-type: none"> 12. What research on MPP is needed most? What would be a reasonable comparison group? What outcomes are most important and when should they be measured (length of follow-up)? 13. Should “interdisciplinary” be part of the standard definition of MPP for research (versus multi)? <p>Feedback on protocol</p> <ol style="list-style-type: none"> 14. How has the content of MPPs changed/evolved since their proliferation in the 1980’s? 15. Please review/comment on indicators/examples of each of four MPP components (see below). <ol style="list-style-type: none"> a. Are the examples assigned to the correct component? b. Are there any examples we should delete? Any examples we should add? 16. Grey literature search: which professional organizations are important to consult regarding: <ol style="list-style-type: none"> a. Consensus statements regarding multidisciplinary pain programs b. Abstracts and/or preliminary study findings
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Components of MPP	Examples and Indicators of Each Component
Medical	<ul style="list-style-type: none"> • Responsible for patient’s physical well-being • Manage medications • Educational component may be included with medical (but research study must explicitly state this) e.g., neurophysiology education
Behavioral	<ul style="list-style-type: none"> • Responsible for psychosocial aspects of patients’ care • Cognitive Behavioral Therapy (CBT) • Operant Behavioral Therapy (OBT) • Stress management training • Relaxation, progressive muscle relaxation • Applied relaxation • Biofeedback • Behavioral therapy • Comorbidity diagnosis and treatment • Help patient unlearn maladaptive responses to pain • Problem solving • Individual or group psychotherapy • Educational component is often included with behavioral (but research study must explicitly state this)
Physical Reconditioning	<ul style="list-style-type: none"> • Physical Therapy (PT) or Occupational Therapy (OT) • Upper extremity, ergonomic assessment and problem solving, work activities, leisure activities, ADLs. • Graduated activity exposure (pacing) enabling patients to control

Components of MPP	Examples and Indicators of Each Component
	<p>exacerbations in pain by learning to regulate the activity and, once a regime of paced activity is established, to gradually increase their activity level</p> <ul style="list-style-type: none"> • Graded therapeutic exercises to safely increase functioning (e.g., flexibility, range of motion, posture, body mechanics, ambulation, gait training, core strength/stability, cardiovascular fitness, increasing upper and lower extremity strength and endurance • Passive modes (e.g., ultrasound, electrical stimulation, massage) are generally avoided in MPP and focus is teaching patients independent management of pain • Stretching and strengthening emphasized • Job analysis and reconditioning • Aerobic exercises • Exercise therapy • Hydrotherapy, swimming • Educational component is often included with Physical Reconditioning (but research study must explicitly state this), e.g., back education
Educational	<ul style="list-style-type: none"> • Improved self management is the focus • Educational component is sometimes integrated with one or more other component - (e.g., by psychologist with behavioral component or by nurse with medical component or by PT with physical reconditioning component) • Back education • Home exercise training • Ergonomic training • Neurophysiology education provided by a physician or nurse

Appendix C. Search Strategy

Concept Analysis

Three concepts relate to all key questions addressed in this Technical Brief. The concepts are (1) pain, (2) chronic, and (3) multidisciplinary treatment. Appendix Table C-1 explains the concept analysis and terminology that was used in searching Ovid MEDLINE®. MeSH terms (or other terms relevant to the specific bibliographic database as determined by database thesaurus) and text words (with truncation used as necessary) relating to each concept were aggregated. Concepts were combined together to compile a set of literature inclusive of all three concepts for screening. Limitations imposed on the Ovid MEDLINE® search included human studies published in English. The search process was an iterative process with updates to restrict or expand the search as new terms are identified and the search process and resulting sets of literature are analyzed. The search below is the final search used.

Appendix Table C-1. Identification of search terms for relevant concepts

		Concepts		
		Pain	Chronic	Multidisciplinary Treatment
Search terms: (MeSH) and text words	Set A	Pain (MeSH) pain.mp neuralgia.mp	chronic.mp sustain*.mp intractable.mp. refractory.mp. persistent.mp.	Patient Care Team (MeSH) multidisciplinar\$.tw interdisciplinar\$.tw multiprofessional\$.tw multimod\$.tw (comprehensive adj2 program\$).mp. (functional adj restor\$).mp. (functional adj rehab\$).mp.
	Set B	Pain clinics (MeSH)		
MPP Literature Set = A + B				

Ovid MEDLINE(R) Search Strategy:

Database: Ovid MEDLINE(R) <1950 to May Week 4 2010>

Search Strategy:

-
- 1 exp *Pain/
 - 2 pain\$.mp.
 - 3 neuralg\$.mp.
 - 4 1 or 2 or 3
 - 5 chronic.tw.
 - 6 sustain\$.mp.
 - 7 intractable.mp.
 - 8 refractory.mp.
 - 9 persistent.mp.
 - 10 5 or 6 or 7 or 8 or 9
 - 11 exp *Pain Clinics/
 - 12 (4 and 10) or 11
 - 13 *Patient Care Team/
 - 14 multidisciplinar\$.mp.
 - 15 interdisciplinar\$.mp.
 - 16 multiprofessional\$.mp.
 - 17 multimod\$.mp.
 - 18 (comprehensive adj2 program\$).mp.

19 (functional adj restor\$).mp. [mp=title, original title, abstract, name of substance word, subject heading word, unique identifier]
20 (functional adj rehab\$).mp.
21 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20
22 12 and 21
23 exp Neoplasms/
24 cancer.mp.
25 exp Pain, Postoperative/
26 (post and (operative or surgical)).mp. [mp=title, original title, abstract, name of substance word, subject heading word, unique identifier]
27 ("chest pain" or angina).mp.
28 pediatric.mp. or exp Pediatrics/
29 23 or 24 or 25 or 26 or 27 or 28
30 22 not 29
31 limit 30 to (english language and humans)
32 limit 31 to "all child (0 to 18 years)"
33 limit 32 to "all adult (19 plus years)"
34 31 not 32
35 34 or 33
36 limit 35 to yr="1985-Current"
37 limit 36 to (addresses or bibliography or biography or dictionary or directory or in vitro or interactive tutorial or lectures or legal cases or legislation or letter or news or newspaper article or patient education handout or portraits)
38 36 not 37
39 limit 38 to validation studies
40 38 not 39

Appendix D. Included Studies

Table D1. Study populations

Citation	MPP Population (duration of pain, prior treatments, etc.)	Comparison Population (duration of pain, prior treatments, etc.)	Clinical Conditions	Other Inclusion and Exclusion Criteria
Alaranta 1994 ⁹¹	duration at least 6 months; one back surgery at most, no other recommended rehab, no contraindication for heavy exercise	same	back disease without inflammation	age 30-47, no compensation or claim of pension; exclusion: psychological reasons (serious AXIS I or II disorder of DSM III, low intelligence, neuropsychologic defects hindering patient from participating in the training program; lack of motivation including poor cooperation and unwillingness to perform the tests), severe back diseases contraindicating heavy, physical training (including primary need for operative treatment)
Altmaier 1992 ⁹²	disabled and not working due to pain for 3-30 months	same	low back pain	not candidates for lumbar surgery; age 18-63; not currently involved in personal injury litigation; not in pain due to pregnancy, severe vertebral fracture, etc.; not demonstrating significant levels of depression or anger
Andary 1997 ⁹³	All pts received MPP treatment; no info given on definition of chronic pain, duration. "All diagnostic efforts, appropriate treatment, and pain control measures must have been exhausted or shown to be ineffective before initiation of the program"		all patients completed chronic pain program; half were also treated for traumatic brain injury (TBI); the other half were matched controls with no sign of TBI	
Angst 2006 ¹⁸	history of failed or insufficient efficacy of outpatient treatment after at least 27 ambulatory PT sessions; 43% not working, 48% working part-time; 30% had disease duration of 0.8 to 4.9 years (remainder were more than 5 years)		half had fibromyalgia, half had chronic back pain	failed outpatient treatment, FM or chronic back pain of at least 6 months duration; willingness to learn behavioral patterns and motivation to participate in graded activity exercise programs; ability to formulate realistic functional goals, sufficient cognitive abilities and German language skills to understand the content of the interventions, agreement/informed consent exclusion: severe somatic illness requiring specific treatment (e.g., cancer, inflammatory rheumatic disease, neurologic disease, post-surgery pain); manifest psychiatric disorder such as dementia, psychosis, suicidality

Table D1. Study populations (continued)

Citation	MPP Population (duration of pain, prior treatments, etc.)	Comparison Population (duration of pain, prior treatments, etc.)	Clinical Conditions	Other Inclusion and Exclusion Criteria
Angst 2009 ²¹	46% have "no working capacity"; 49% back pain, 32% FM, 18% widespread pain; mean duration of pain 72 months (range 6-156 months)	34% have "no working capacity"; 73% back pain, 15% FM, 13% widespread pain; mean duration of pain 79 months (range 3-564 months)	back pain, fibromyalgia, widespread pain	inclusion: ability to complete self-assessment questionnaires, German language skills, written informed consent; additionally, MPP pts had to be willing to learn behavioral patterns and motivated to participate
Bailey 2003 ⁹⁴	pain lasting 6+ mos.	n/a	heterogeneous diagnoses	started with 162 consecutive referrals
Bendix 1998 ⁹⁵	289 to 345 days of sick leave in the past 3 years; 38-39% work readiness; 33-35% participating in sports activity	301 to 450 days of sick leave in the past 3 years; 16-45% work readiness; 19-33% participating in sports activity	disabling low back trouble: 47% with non-specific lumbago with or without sciatica	inclusion: 6 mos of disabling low back trouble, threatened job situation owing to back problems, aged 18 to 59, able to read and write Danish exclusion: current disk herniation (which might be amenable to surgery or bed rest), other surgically remediable lesions, inflammatory disease of the back, pregnancy, cancer, clinically relevant fractures; receiving social pensions; evidence of severe personality disorder or psychosis precluding participation in group treatment
Bendix 1995 ⁸¹	median days of sick leave in 3 years: 296; 15% had previous back surgery; 23% work readiness	median days of sick leave in 3 years: 300 to 440 (depending on program); 17-32% had previous back surgery; 23-42% work readiness	disabling low back trouble	inclusion: 6 mos of disabling low back trouble, threatened job situation owing to back problems, aged 18 to 59, able to read and write Danish exclusion: current disk herniation (which might be amenable to surgery or bed rest), other surgically remediable lesions, inflammatory disease of the back, pregnancy, cancer, clinically relevant fractures; receiving social pensions
Bendix 1996 ⁴³	median days of sick leave in 3 years: 340; 16% had previous back surgery; 27% "could work"	median days of sick leave in 3 years: 370; 18% had previous back surgery; 16% "could work"	disabling low back trouble, "most" had a degenerative disease of the disk or facet or both	inclusion: 6 mos of disabling low back trouble, threatened job situation owing to back problems, aged 18 to 59 exclusion: current disk herniation (which might be amenable to surgery or bed rest), other surgically remediable lesions, inflammatory disease of the back, pregnancy, cancer, clinically relevant osteoporosis with or without fractures; receiving social pensions
Bendix 1997 ⁷⁹	median days of sick leave in 3 years: 273; 24% work readiness	median days of sick leave in 3 years: 300 to 415 (depending on program);	disabling low back trouble: 44 to 50% with non-specific	inclusion: 6 mos of disabling low back trouble, threatened job situation owing to back problems, aged 18 to 59, able to read and write Danish

Table D1. Study populations (continued)

Citation	MPP Population (duration of pain, prior treatments, etc.)	Comparison Population (duration of pain, prior treatments, etc.)	Clinical Conditions	Other Inclusion and Exclusion Criteria
		18-39% work readiness	lumbago with or without sciatica	exclusion: current disk herniation (which might be amenable to surgery or bed rest), other surgically remediable lesions, inflammatory disease of the back, pregnancy, cancer, clinically relevant fractures; receiving social pensions
Bendix 1998 ⁹⁶	41% work readiness; 240 days sick leave (median) in past 3 years; 42% active in sport	28% work readiness; 323 days sick leave (median) in past 3 years; 27% active in sport	chronic disabling low back pain	inclusion: 6 mos of disabling low back trouble, threatened job situation owing to back problems, aged 18 to 61, able to read and write Danish exclusion: current disk herniation (which might be amenable to surgery or bed rest), other surgically remediable lesions, inflammatory disease of the back, pregnancy, cancer, clinically relevant fractures; receiving social pensions
Bendix 1998 ⁹⁷	273 to 345 days of sick leave in the past 3 years; 37-38% work readiness; 35-38% participating in sports activity	301 to 415 days of sick leave in the past 3 years; 16-46% work readiness; 24-32% participating in sports activity	disabling low back trouble: 44 to 53% with non-specific lumbago with or without sciatica	inclusion: 6 mos of disabling low back trouble, threatened job situation owing to back problems, aged 18 to 59, able to read and write Danish exclusion: current disk herniation (which might be amenable to surgery or bed rest), other surgically remediable lesions, inflammatory disease of the back, pregnancy, cancer, clinically relevant fractures; receiving social pensions
Bendix 2000 ⁷⁸	median 200 days of sick leave in the past 3 years; 53% work readiness	median 220 days of sick leave in the past 3 years; 40% work readiness	chronic low-back pain	inclusion: 6 mos of disabling low back trouble, threatened job situation owing to back problems, aged 18 to 59, able to read and write Danish exclusion: current disk herniation (which might be amenable to surgery or bed rest), other surgically remediable lesions, inflammatory disease of the back, pregnancy, cancer, clinically relevant fractures; receiving social pensions
Bliokas 2007 ⁹⁸	4.0 years median pain duration; 45%-48% compensable injuries	4.5 years median pain duration; 51% compensable injuries	56.6% low back pain; 10.5% extremity pain	noncancer, nonarthritis pain; age less than 70 years; no primary drug and/or alcohol problem; no severe psychiatric conditions; able to read and speak English; willing and able to attend program; suitable for a group program (no poorly controlled anger, no imminent court proceedings, no planned significant medical interventions)

Table D1. Study populations (continued)

Citation	MPP Population (duration of pain, prior treatments, etc.)	Comparison Population (duration of pain, prior treatments, etc.)	Clinical Conditions	Other Inclusion and Exclusion Criteria
Buchner 2006 ⁹⁹	referred after failing standard biomedical therapy; mean duration of current pain was 16-17 months; 12-17% had prior surgery for the pain		either chronic neck pain or chronic low back pain (39-45% of pts had pain radiating to an extremity)	age 18 to 55; 3+ mos duration of disabling pain that led to the pts being on sick leave for at least 6 weeks; exclusion: specific etiologies of the neck or lower back pain were excluded (e.g., tumor, trauma, inflammatory disease or infection, radicular sensorimotor deficits in upper or lower extremity), multiple major pain locations, main pain location other than neck or lower back
Buchner 2007 ¹⁰⁰	mean duration of pain 20 to 34 months (depending on age group); 11 to 19% had previous surgery due to low back pain; had disabling pain of at least 3 months duration that led to pts being on sick leave for at least 6 weeks (note: 64 to 71% of pts reported engaging in "regular daily sports activity" before treatment)		chronic low-back pain	chronic low-back pain as the major symptom, age between 18 and 65, adequate command of "domestic language," specific etiologies of the lower back pain were excluded (e.g., tumor, trauma, inflammatory disease or infection, nucleus pulposus prolapse with corresponding radicular pain, structural pathology of the lumbar spine), rheumatological disease, serious cardiopulmonary, vascular, or other internal medical conditions, any sensorimotor and/or neurological deficits in the lower extremity, spinal surgery in the year before admission to treatment, any other major pain location
Buchner 2007 ¹⁰¹	all pts had disabling pain of at least 3 months duration that led to sick leave of at least 6 weeks; mean duration of pain 10 to 27 months (depending on chronicity group); 6 to 15% had previous surgery due to low back pain; 28 to 38% reported engaging in "regular sports activity"		chronic low back pain	chronic low-back pain as major symptom, age between 18 and 65, adequate command of "domestic language," specific etiologies of the neck or lower back pain were excluded (e.g., tumor, trauma, inflammatory disease or infection, radicular sensorimotor deficits in upper or lower extremity, severe degenerative changes, structural pathology of the lumbar spine), rheumatological disease, serious cardiopulmonary, vascular, or other internal medical conditions, any sensorimotor and/or neurological deficits in the lower extremity, spinal surgery in the year before admission to treatment, any other major pain location
Burnham 2010 ²³	mean pain duration 8.4 years; 31% employed	mean pain duration 8.1 years; 43% employed	MPP: 48% soft tissue pain (myofascial or FM), 34% mechanical spine pain, 18% neuropathic pain Pharma: 22% soft	initial triage spinal vs. medical care--medical care triage for chronic pain complicated by significant medication management, psychosocial and/or comorbid medical illness issues; some medical triaged patients received consultation only (743 out of 825)

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Table D1. Study populations (continued)

Citation	MPP Population (duration of pain, prior treatments, etc.)	Comparison Population (duration of pain, prior treatments, etc.)	Clinical Conditions	Other Inclusion and Exclusion Criteria
			tissue, 35% mechanical spine, 29% neuropathic, 14% other	
Burns 2000 ¹⁰²	benign MSK pain, average 23 months since injury, 55% underwent 1+ surgeries for pain, 70% receiving worker's compensation		"benign musculoskeletal pain": 59% low back pain	excluded for current alcohol/substance abuse, history of psychotic or bipolar disorders, could not read English, pain due to malignant condition or to migraine or tension headache
Burns 1998 ¹⁰³	benign MSK pain, average 24 months since injury, 55% underwent 1+ surgeries for pain, 70% receiving worker's compensation, 71% not working		"benign musculoskeletal pain": 62% low back pain	excluded for current alcohol/substance abuse, history of psychotic or bipolar disorders, could not read English, pain due to malignant condition or to migraine or tension headache
Burns 1998 ¹⁰⁴	benign MSK pain, average 23 months since injury, 55% underwent 1+ surgeries for pain, 71.3% receiving worker's compensation, 74.5% not working		"benign musculoskeletal pain": 66% low back pain	excluded for current alcohol/substance abuse, history of psychotic or bipolar disorders, could not read English
Burns 2003 ¹⁰⁵	average 40 months since injury, 49% had at least one pain related surgery, 58.5% not working due to pain		benign MSK pain	excluded for pain due to malignant conditions (cancer, RA), could not read English, current alcohol/substance abuse, history of psychotic or bipolar disorder
Burns 2003 ¹⁰⁶	average 45 months since injury, 42% had at least one pain related surgery, 32.2% not working due to pain		benign MSK pain	excluded for pain due to malignant conditions (cancer, RA), could not read English, current alcohol/substance abuse, history of psychotic or bipolar disorder
Burns 2005 ¹⁰⁷	average 32 months since injury, 49% had at least one pain related surgery, 58.5% not working due to pain		benign MSK pain	excluded for pain due to malignant conditions (cancer, RA), could not read English, current alcohol/substance abuse, history of psychotic or bipolar disorder
Carleton 2010 ¹⁰⁸	average 4.9 previous insurance claims involving lost time from work; pain duration mean 1 year (range 3 mos. to 9 yrs); 78% employed prior to injury		50% low-back pain, 50% extremity pain (e.g., arm, shoulder, leg, knee)	medical clearance for participation
Cassisi 1989 ¹⁰⁹	average pain duration of 24 to 60 months, 49% had surgery	average pain duration of 24 to 60 months, 51% to	severe chronic low back pain	4 comparison groups: pts whose participation was not approved by insurance, pts who declined participation,

Table D1. Study populations (continued)

Citation	MPP Population (duration of pain, prior treatments, etc.)	Comparison Population (duration of pain, prior treatments, etc.)	Clinical Conditions	Other Inclusion and Exclusion Criteria
	prior to referral to the pain clinic (average of 1.3 surgeries per patient), 13% were employed	64% (depending on subgroup) had surgery prior to referral to the pain clinic (average of 1.1 to 1.7 surgeries per patient), 14% to 29% were employed		pts who participated in other programs, pts who began but dropped out of the UMCPRC program
Cedraschi 2004 ¹⁶	mean duration of symptoms 8.4 years; 17% employed	mean duration of symptoms 9.5 years; 13% employed	Fibromyalgia	Inclusion: sufficient fluency in French to participate in group sessions, informed consent; Exclusion: presence of specific medical disorders which required immediate treatment, prevented physical activity or participation in swimming pool sessions
Chapman 1990 ¹¹⁰	36 to 60 months pain duration depending on subgroup, average of 1 surgery before referral		low back pain	15 pts excluded from study due to disagreement over whether pt showed inconsistency in behaviors and statements about pain (initial cohort of 175)
Chapman 1994 ¹¹¹	mean duration of pain is 85 months; 41% had previous back surgery, 41% had upcoming litigation or were receiving workers' comp		chronic low back pain	fit into one of the MMPI clusters used in study (of 742 potential subjects, 558 did not fit the clusters)
Chapman 1996 ¹¹²	chronic pain 3+ mos. duration; almost all had failed to obtain significant pain relief or normal function despite multiple previous treatments in health care settings; mean years since pain onset of 6.5 years for Center A, 4.6 years for Center B; 21.6% and 13.5% of patients were working at pretreatment; 59.5% and 73.6% were receiving disability at pretreatment		variety, most frequent was low back pain	
Chapman 2000 ⁵⁰	Pain duration of 3+ mos. despite having received "a variety of conventional medical approaches"; average duration of pain was 77.9 mos. for A, 57.0 for B and 26.7 for C		chronic pain (variable location)	

Table D1. Study populations (continued)

Citation	MPP Population (duration of pain, prior treatments, etc.)	Comparison Population (duration of pain, prior treatments, etc.)	Clinical Conditions	Other Inclusion and Exclusion Criteria
Ciechanowski 2003 ¹¹³	significant pain-related disability; mean pain duration was 6.3 years; 30% working full- or part-time; 85% receiving pain-related disability compensation, 14% had litigation pending		varied: 33% low-back pain; 21% neck, 19% shoulder or arm, 13% leg	age 18+; no current alcohol/substance abuse problem, no surgically remediable cause of pain, no comorbidity that would prohibit participation, no dementia; have pain interfering with patient's customary activities; have behavioral and functional goals; have funding for the program; able to read/write English
Connally 1991 ¹¹⁴	suffering from chronic low back pain, candidate for lumbar sympathetic nerve blocks, no prior treatment with such blocks; average pain duration 5.8 years, average pain-related surgeries 1.5		chronic low back pain	willingness to participate
Cott 1990 ¹¹⁵	mean duration of disability (i.e., on leave from work): 20.1 mos. (range 1-108 mos.); symptoms persisted for 6 mos.+; displayed marked illness behavior; medical and behavioral assessments indicated symptoms and severity of functional limitations inconsistent with level of identifiable pathology		varied	
Crisostomo 2008 ¹¹⁶	Disabling low-back pain, not surgical candidates; average pain duration of 79 to 151 months, depending on subgroup; pre-admission, pts "received medical care from a physician and experienced incomplete symptomatic relief from multiple pharmacologic trials, repeated courses of physical therapy, or interventional pain procedures"		chronic low-back pain	exclusion: fibromyalgia, inflammatory rheumatologic disease, pain related to previous malignancy
Currie 2003 ¹⁵	non-cancerous chronic pain that has not responded to medical intervention; DSM-IV		comorbid chronic non-cancer pain and substance	pseudoaddiction: drug-seeking behavior better explained by uncontrolled pain rather than true substance abuse

Table D1. Study populations (continued)

Citation	MPP Population (duration of pain, prior treatments, etc.)	Comparison Population (duration of pain, prior treatments, etc.)	Clinical Conditions	Other Inclusion and Exclusion Criteria
	diagnosis of substance abuse or dependence		abuse; 61% MSK pain, 42% headache, 42% visceral pain, 20% FM; 66% opioid abusers; 16% alcohol and opioids	
Davis 1992 ¹¹⁷	Chronic pain patients who completed treatment program; mean duration of pain of 41.2 months, mean number of surgical procedures was 1.1		most common was low back pain	"found to be appropriate for the pain management program"
Deardorff 1991 ⁷³	mean duration of pain is 3 years; 43% had prior surgery, 60% were not working due to pain, 45% had ongoing litigation	mean duration of pain is 4 years; 27% had prior surgery, 47% were not working due to pain, 20% had ongoing litigation	varied: 55% of treated had low back pain (vs. 67% non-treated); 29% had head/neck pain (vs. 20% of non-treated)	no-treatment comparison group composed of those accepted to treatment program, but denied insurance authorization
Demoulin 2010 ¹¹⁸	mean pain duration of 8.2 years for men, 12.6 years for women	mean pain duration of 7.8 years for men, 6.8 years for women	chronic low-back pain	exclusion: surgery within the past year, multiple surgeries, comorbidities including fibromyalgia and neck pain, medicolegal factors, severe initial pain precluding the evaluations or a large number of the exercises used in the treatment, psychological disturbances, obesity (BMI>30), age younger than 20 or older than 75
Dersh 2008 ¹¹⁹	all had partial or total work disability for 4+ months; mean disability for non-Opioid Dependent pts was 17 months, for Opioid Dependent pts it was 29 mos.; 28% of non-ODD pts had had surgery before rehab vs. 49% of ODD pts; primary or secondary nonoperative care failed to overcome chronic disability; surgery had not produced resolution or was not an option; severe functional limitations remained		Chronic Disabling Occupational Spinal Disorders	more than 4 mos. since work-related injury;

Table D1. Study populations (continued)

Citation	MPP Population (duration of pain, prior treatments, etc.)	Comparison Population (duration of pain, prior treatments, etc.)	Clinical Conditions	Other Inclusion and Exclusion Criteria
Doleys 1986 ¹²⁰	pain 6+ mos. duration, disability and pain complaints out of proportion with physical findings, unsuccessful treatment by conventional medical therapies; average pain duration of 30.2 months; 61% had undergone at least one surgical procedure, with an average of 2.4		81% back pain, others arm, facial, elbow, knee, abdominal	no surgery within past 6 months, absence of surgical lesions, availability of spouse or significant other to participate in family meetings
Dunstan 2007 ¹²¹	mean duration of pain was 31 months (range 6-162 mos.); mean time off work was 13.3 mos. (range 0-72 mos.); 33% were working at program commencement		63% back injury; all had work-related soft-tissue MSK injuries	age 18+; able to read/speak English; pain of 12+ weeks' duration preventing return to work or upgrading of duties; an Örebro Musculoskeletal Pain Questionnaire total score of ≥ 105 ; primary diagnosis is not mental disorder or addiction; serious medical conditions have been excluded as the source of symptoms.
Dysvik 2004 ¹²²	20% working full or part-time; mean duration of pain was 10 years (range 1 to 46 years); 57% MSK pain		chronic pain	18-67 years old, chronic non-malignant pain for more than 6 months, medical investigation and/or treatment completed prior to referral, motivation to participate in an active rehab program, no ongoing litigation related to cause of pain
Dysvik 2005 ¹²³	23% working full or part-time; pain duration: 23% of life; 51% MSK pain		chronic pain; 51% with pain in several regions	18-67 years old, chronic non-malignant pain for more than 6 months, medical investigation and/or treatment completed prior to referral, motivation to participate in an active rehab program, no ongoing litigation related to cause of pain
Edwards 2003 ¹²⁴	average pain duration 31-34 months, average previous surgeries 0.9 to 1.5 (women vs. men)		chronic pain: 64% of men and 52% of women had low back pain	study looked only at treatment completers
Elkayam 1996 ¹²⁵	mean duration of symptoms 64 mos (range 3 to 120 mos)		67% lumbar pain, 18% cervical pain, 10% thoracic, 5% diffuse	age 22-60; back pain of 3+ mos duration; failure of previous physical therapy in Maccabi PT centers
Elkayam 1996 ¹²⁶	low-back pain duration of 3+ mos; failed physical and analgesic treatment; no previous spinal surgery, normal neurological examinations		chronic non-progressive back pain in the lumbar region	age 22-60

Table D1. Study populations (continued)

Citation	MPP Population (duration of pain, prior treatments, etc.)	Comparison Population (duration of pain, prior treatments, etc.)	Clinical Conditions	Other Inclusion and Exclusion Criteria
Ersek 2008 ¹²⁷	pain 3+ months duration that interfered with daily activities; most common pain sites were Legs and/or Feet (72%), Back (53%), Buttocks/Hips (51%), and Shoulder (38%).	pain 3+ months duration that interfered with daily activities; most common pain sites were Legs and/or Feet (74%), Back (61%), Buttocks/Hips (58%), and Shoulder (46%).	chronic pain	age 65+; no surgery in past 6 mos., no surgery planned in next 6 mos.; living in a retirement community in the Puget Sound area of Washington state; no active cancer; able to complete study questionnaires
Evans 2001 ¹²⁸			chronic low-back pain	
Feuerstein 1993 ¹²⁹	work disabled for 3+ months, receiving workers' comp indemnity and medical benefits	pts not eligible for the program for following reasons: 5 referred to other programs, 3 denied by insurance carrier, 3 refused by participant, 2 inappropriate for the program due to high level of illness behavior/depression/pain, 1 denied by employer, 1 denied by physician	nerve entrapment and tendonitis-related upper extremity disorders	
Fishbain 2005 ¹³⁰	pain over 6 mos. duration, no info on prior treatments		chronic low-back pain or chronic neck pain	
Flavell 1996 ¹³¹	approx 34% women; chronic pain more than 6 mos.		chronic back pain	absence of behavioral problems which could interrupt the group process, acceptance of concept of pain management vs. cure; sufficient English language skills to understand the program
France 1991 ¹³²	mean duration of pain is 72.4 mos. (range 6 to 240 mos.); average number of pain operations was 2.5 (range 1 to 5)		low back pain/sciatica	6+ months daily pain, evidence of neurological dysfunction explaining location of pain, willingness to undergo pain mgmt under conditions of study; exclusions: dementia, schizophrenia, substance-use disorder, major neurological disorders, somatoform disorders, "evidence for overt secondary gains as obtained from history and psychiatric interview"
Fricton 1996 ¹³³	6+ mos. duration (mean 102 months), has not responded to previous treatment; mean 3.5 different professionals consulted for the problem		Chronic Temporomandibular Pain (TMJ or myofascial pain dysfunction)	

Table D1. Study populations (continued)

Citation	MPP Population (duration of pain, prior treatments, etc.)	Comparison Population (duration of pain, prior treatments, etc.)	Clinical Conditions	Other Inclusion and Exclusion Criteria
Gagnon 2009 ¹³⁴		chronic lower back pain	inclusion: more than 3 mos duration of pain, pain intensity above 50 mm on the VAS, pain has a "considerable" impact on patient's life (as measured by RDQ and DPQ); pain has mechanical characteristics without inflammatory symptoms; normal neuro exam; absence of predominant radicular pain (sciatic or crural)	directed by physicians
Garcy 1996 ¹³⁵	minimum 4 months post-injury; "'worst-case' regionally selected and referred Chronic Disabling Spinal Disorder patients"		Chronic Disabling Spinal Disorder	
Gatchel 1986 ¹³⁶	minimum 4-months post-injury; need for subsequent surgery ruled out; referred as "failures of conventional medical/surgical care"; avg. months since injury=23.8; avg. months since last working =12.5; percent with prior surgeries = 39.5		chronic low-back pain	

Table D1. Study populations (continued)

Citation	MPP Population (duration of pain, prior treatments, etc.)	Comparison Population (duration of pain, prior treatments, etc.)	Clinical Conditions	Other Inclusion and Exclusion Criteria
Gatchel 1986 ¹³⁷	minimum 4-months post-injury; need for subsequent surgery ruled out; referred as "failures of conventional medical/surgical care"; avg. months since injury=23.8; avg. months since last working =12.5; percent with prior surgeries = 39.5		chronic low-back pain	
Gatchel 1994 ¹³⁸	average ~14 mos. since injury; referred "because they had not responded to conventional/surgical care"		Chronic low back pain disability	at least 4 mos. since injury, speak English, reasonable surgical alternative determined to be unnecessary by 2 or more physicians
Gatchel 1999 ¹³⁹	minimum 4 months post-injury		chronic spinal disorders	
Gatchel 2002 ¹⁴⁰	average 86.6 months		multiple heterogeneous	pt has persistent pain limiting work/other activities; surgery didn't work/wasn't clinically indicated; English speaking; for those with insurance, payer authorized treatment; pt agreed to complete prescribed treatment program
Gatchel 2005 ¹⁴¹	minimum 4-months post-work-related injury; primary or secondary nonoperative care failed to overcome chronic disability; surgery had not produced resolution or was not an option; severe functional limitations remained		chronic disabling work-related spinal disorder (CDWRSD)	able to speak English or Spanish, consented to and began prescribed functional restoration
Gatchel 2009 ⁹⁰	pain duration 68 mos.; 77% Air Force; 83% enlisted (vs. officer)	pain duration 63 mos.; 72% Air Force; 80% enlisted (vs. officer)	musculoskeletal disorder (70-75% lumbar)	active duty military with at least 18 months retainability (to ensure availability for follow-up); no Medical Evaluation Board in progress; decreased ability to perform duty requirements because of pain and disability; no current plan for surgery, morphine pump, or spinal cord stimulator
Gatchel 2010 ¹⁴²	minimum 4-months post-work-related injury; primary or secondary nonoperative care failed to overcome chronic disability; surgery had not produced resolution or was not an option; severe		chronic disabling occupational spinal disorders (CDOSD)	able to speak English or Spanish, consented to and completed prescribed functional restoration

Table D1. Study populations (continued)

Citation	MPP Population (duration of pain, prior treatments, etc.)	Comparison Population (duration of pain, prior treatments, etc.)	Clinical Conditions	Other Inclusion and Exclusion Criteria
	functional limitations remained			
Glenn 2003 ¹⁴³	average 32 months since injury, 49% had at least one pain related surgery, 58.5% not working due to pain		benign MSK pain	excluded for pain due to malignant conditions (cancer, RA), could not read English, current alcohol/substance abuse, history of psychotic or bipolar disorder
Gross 2005 ¹⁴⁴	median 86-92 days between injury and admission, average 183-240 days between injury and admission; all WCB-Alberta claimants receiving time-loss benefits for conditions related to the low back of at least 6 weeks duration; typically those admitted to this program are continuing to experience disabling back pain beyond expected recovery times, have not returned to work following a period of primary care management, not requiring further medical investigation		disabling low-back pain	
Guck 1988 ¹⁴⁵	pain duration 6+ mos.; "other medical or psychiatric treatments were not more appropriate"		pain of a chronic benign nature ("that is, it was not the result of an active disease process")	pts indicated "that they wanted to participate in the program", pts "agreed to involve family members or significant other persons in treatment"
Guck 1999 ⁸⁰	pain duration 6+ months interfering significantly with activities of daily living		chronic nonmalignant pain	exclusion: presence of surgically correctable condition, presence of coexisting medical problem that would preclude ability to do the required physical exercises (e.g., diabetes, cardiac disease, etc.); presence of organic brain syndrome or psychosis; age under 16; inability to read/write English
Gunreben-Stempfle 2009 ²⁸	for patients with migraine, 13% had been experiencing headaches for less than 5 years, 7% for 5 to 10 years, and 80% for more than ten years; for patients with	for patients with migraine, 3 or 14% had been experiencing headaches for less than 5 years, 13 or 20% for 5 to 10 years, and 84 or 66% for more	chronic headache: Migraine and/or Tension-Type Headaches	age 18+, headaches for at least 1 year and diagnosed as either migraine and/or tension-type headache or other headache disorders according to the criteria of the International Headache Society, occurring on 8 or more days per month; excluded if not able or willing to complete the questionnaires or sign the informed

Table D1. Study populations (continued)

Citation	MPP Population (duration of pain, prior treatments, etc.)	Comparison Population (duration of pain, prior treatments, etc.)	Clinical Conditions	Other Inclusion and Exclusion Criteria
	Tension-Type Headaches, 22% had been experiencing headaches for less than 5 years, 15% for 5 to 10 years, and 63% for more than ten years	than ten years (first number is for low-intensity pain program participants, second number is for primary care patients); for patients with Tension-Type headaches, 45 or 52% had been experiencing headaches for less than 5 years, 14 or 24% for 5 to 10 years, and 41 or 24% for more than ten years (first number is for low-intensity pain program participants, second number is for primary care patients)		consent form
Gustafsson 2002 ¹³	mean years of symptoms: 13.2; 48% diagnosed as FM	mean years of symptoms: 12.5; 70% diagnosed as FM	Fibromyalgia or widespread chronic pain	well-analyzed pain not caused by injury or other diseases, no misuse of drugs or serious psychiatric disease, considered by the social insurance office to need rehabilitation for return to work
Hatten 2006 ¹⁴⁶	mean for entire sample was 93 months; mean for MPP was approx 99 mos.	mean for entire sample was 93 months; mean for non-MPP was approx 82 mos.	chronic spinal pain (cervical, lumbar or thoracic)	consecutive sample of pts with primary diagnosis of chronic spinal pain seen at center for whom billing information was available; protocols determined by treating physician's clinical judgment and managed care coverage rules; exclusion: terminal illness
Hazard 1989 ¹⁴⁷	4+ months continuous disability from work because of back pain (avg. 19 mos.), avg. 0.4 spinal surgeries	4+ months continuous disability from work because of back pain (avg. 19 mos.), avg. 0.4 spinal surgeries	chronic disabling low-back pain	no evident surgically remediable lesion, no evidence of psychosis or severe personality disorder precluding participation in group treatment
Hazard 1991 ¹⁴⁸	average 14.7 mos. work loss; avg. 21.6 mos. pain duration, avg. 0.3 spinal surgeries	4+ months continuous disability from work because of back pain (avg. 19 mos.), avg. 0.4 spinal surgeries	chronic disabling low-back pain	no evident surgically remediable lesion, no evidence of psychosis or severe personality disorder precluding participation in group treatment
Hazard 2009 ¹⁴⁹	3+ months disabling back pain (avg. 19 mos.), avg. 0.4 spinal surgeries	4+ months continuous disability from work because of back pain	chronic disabling low-back pain	no evident surgically remediable lesion, no cardiovascular comorbidity restricting activity, no evidence of psychosis or severe personality disorder

Table D1. Study populations (continued)

Citation	MPP Population (duration of pain, prior treatments, etc.)	Comparison Population (duration of pain, prior treatments, etc.)	Clinical Conditions	Other Inclusion and Exclusion Criteria
		(avg. 19 mos.), avg. 0.4 spinal surgeries		precluding participation in group treatment, treadmill, lifting, flexibility tests indicating significant deficits compared to pts personal functional goals
Hildebrandt 1997 ¹⁵⁰	mean duration 153 months; 30% had prior back surgery; 81% not working (receiving full work compensation, mean duration of time off was 9 months)		chronic low back pain	age 18-57, chronic back pain not a result of inflammation or cancer, no indication for surgical treatment, at least 3 months of time off work during the last year
Hooten 2007 ¹⁹	persistent (mean 9.9 years) non-cancer pain and associated functional impairment; pre-admission, pts "received medical care from a physician and experienced incomplete symptomatic relief from multiple pharmacologic trials, repeated courses of physical therapy, and interventional pain procedures"		Fibromyalgia	
Hooten 2009 ¹⁵¹	average 89 to 149 mos. pain duration depending on subgroup; pre-admission, pts "received medical care from a physician and experienced incomplete symptomatic relief from multiple pharmacologic trials, repeated courses of physical therapy, or interventional pain procedures"		multiple diagnoses	exclusion: pts who used forms of tobacco other than cigarettes
Hooten 2009 ¹⁵²	average 103 to 144 mos. pain duration depending on subgroup; pre-admission, pts "received medical care from a physician and experienced incomplete symptomatic relief from multiple pharmacologic trials, repeated courses of physical therapy, or		multiple diagnoses	exclusion: pts who used forms of tobacco other than cigarettes, pts with pain of <3 month duration, major surgery within 6 mo

Table D1. Study populations (continued)

Citation	MPP Population (duration of pain, prior treatments, etc.)	Comparison Population (duration of pain, prior treatments, etc.)	Clinical Conditions	Other Inclusion and Exclusion Criteria
	interventional pain procedures"			
Howard 2009 ¹⁵³	minimum 3 months post-injury; primary or secondary nonoperative care failed to overcome chronic disability; surgery had not produced resolution or was not an option; severe pain and functional limitations remained		CDOMD	able to speak English or Spanish
Huge 2006 ¹⁵⁴	mean duration of pain 10.3 years; median duration 6 years; 36% had prior surgery	mean duration of pain 6.9 years; median duration 6 years; 26% had prior surgery; accepted for treatment program, but did not participate due to problems concerning occupational situation or remoteness of residence	Chronic low-back pain	able to be matched with a control (41 treatment and 38 control patients completed questionnaires, 22 pairs were created); chronic low-back pain for at least 12 weeks, good cardiopulmonary capacity, ergometry with at least 100 W and no signs of change in ECG, no contraindication for physical therapy, no signs of inflammatory or rheumatic causes of back pain, no fibromyalgia, no malignant disease, no major segmental instability as cause of chronic back pain, no claim for workers compensation or disability pension
Jensen 1995 ¹⁵⁵	mean 256 days sick-list in year prior to treatment	mean 237 days sick-list in year prior to treatment	chronic neck and shoulder pain	no objective neurological signs, age 20-55, fluent in Swedish, no comorbidity that could impair participation (e.g., heart condition, alcoholism)
Jensen 1994 ¹⁵⁶	74% workers comp claim, 37 months mean duration of pain; 83% mixed back and neck pain	66% workers comp claim, 44 months mean duration of pain; 80% mixed back and neck pain	non-specific pain syndrome in neck or back	age 20-55, non-specific pain syndrome without objective neurological signs, fluent in Swedish, currently employed, sicklisted for six months or less
Jensen 1998 ¹⁵⁷	neck/shoulder pain: 76%; 51% pending insurance claim; mean pain duration in weeks: 44; mean sick-leave during 6 months before inclusion: 81 days	neck/shoulder pain: 69%; 40% pending insurance claim; mean pain duration in weeks: 47; mean sick-leave during 6 months before inclusion: 78 days	non-specific pain syndrome in neck or back	age 20-55, non-specific pain syndrome without objective neurological signs, fluent in Swedish, currently employed, sicklisted for six months or less
Jensen 1992 ¹⁵⁸	74% unemployed due to pain; 58% receiving financial compensation due to pain; average duration of pain 4.98 years (range 2 months to 32 years)		chronic pain: 47% low back, 13% lower extremities, 11% head, 11% neck, 10% shoulders/arms	
Jensen 1994 ¹⁵⁹	mean pain duration = 5.26 years (range 3 months to 32		varied: 46% low back pain, 15%	age 18-65; no current alcohol/substance abuse problem, no surgically remediable cause of pain, no

Table D1. Study populations (continued)

Citation	MPP Population (duration of pain, prior treatments, etc.)	Comparison Population (duration of pain, prior treatments, etc.)	Clinical Conditions	Other Inclusion and Exclusion Criteria
	years); 16% working full- or part-time; 16% had active litigation pending regarding pain		head, 13% leg, 10% neck	comorbidity that would prohibit participation, no dementia; have pain interfering with patient's customary activities; have behavioral and functional goals; have funding for the program; able to read/write English
Jensen 2001 ¹⁶⁰	significant pain-related disability; median pain duration was 3.2 years (range 4 months to 48 years); 29% working full- or part-time; 60% receiving pain-related disability compensation, 12% had litigation pending		varied: 34% low-back pain; 18% neck, 13% shoulder or arm, 12% leg	age 18-65; no current alcohol/substance abuse problem, no surgically remediable cause of pain, no comorbidity that would prohibit participation, no dementia; have pain interfering with patient's customary activities; have behavioral and functional goals; have funding for the program; able to read/write English
Jensen 2003 ¹⁴	UW: pain duration mean 5.9 years, range 7 months to 48 years FM: pain duration mean 8.7 years, range 8 months to 64 years		UW: 31% low-back pain, 17% upper extremity, 16% neck pain, 15% lower extremity FM: Fibromyalgia	none noted
Jensen 2004 ¹⁷	UW: pain duration mean 6.3 years, range 7 months to 48 years FM: pain duration mean 7.5 years, range 6 months to 64 years		UW: 30% low-back pain, 17% upper extremity, 16% neck pain, 15% lower extremity FM: Fibromyalgia	FM: excluded for medically treatable illnesses accounting for symptoms, unable to participate in PT due to medical condition, had severe psychological disorders (psychoses, severe major depression), unable to read/write English
Jensen 2007 ¹⁶¹	median pain duration of 3.2 years (range 4 months to 48 years); 29% working full- or part-time; 60% receiving pain-related disability compensation; 12% had litigation pending		varied: 34% low-back pain; 18% neck, 13% shoulder or arm, 12% leg	age 18-65; no current alcohol/substance abuse problem, no surgically remediable cause of pain, no comorbidity that would prohibit participation, no dementia; have pain interfering with patient's customary activities; have behavioral and functional goals; have funding for the program; able to read/write English
Jousset 2004 ¹⁶²	presently engaged in a non-limited work contract, but threatened in their job situation by chronic low back pain; 47% on sick leave; mean 195 days of sick leave in the 2 previous years; 35%	presently engaged in a non-limited work contract, but threatened in their job situation by chronic low back pain; 51% on sick leave; mean 202 days of sick leave in the 2	chronic low back pain	age 18-50, living in 3 counties in west of France, pain not relieved by medical or surgical interventions; exclusion: pain of specific origin, spinal surgery within past 4 months, cardiac or respiratory abnormalities after exercise stress tests, psychiatric disorders precluding group participations, receiving disability pensions, not motivated or refused to participate

Table D1. Study populations (continued)

Citation	MPP Population (duration of pain, prior treatments, etc.)	Comparison Population (duration of pain, prior treatments, etc.)	Clinical Conditions	Other Inclusion and Exclusion Criteria
	with previous surgery	previous years; 15% with previous surgery		
Kaapa 2006 ¹⁶³	mean pain duration of 16 mos; 48% engaged in leisure time physical activity at least 2 times per week	mean pain duration of 14 mos; 54% engaged in leisure time physical activity at least 2 times per week	chronic low-back pain with or without sciatica	age 22-57, employed in health and social services; included only women (initial pool included only 2% men); at least 12 months of pain, experienced daily or near-daily, positive attitude of "the superiors" (assumed to be supervisor/boss) exclusions: clinical symptoms suggesting acute disc prolapse accompanied by nerve root entrapment (within 3 mos), back surgery in past 6 mos, severe cardiovascular or other disorder interfering with active rehab, specific back disorder, severe mental illness (psychosis or severe depression), more than 90 days off work due to LBP during preceding year, pension in near future (within 2 years), pregnancy, ongoing or planned low back pain rehabilitation
Kenny 2004 ¹⁶⁴	mean pain duration of 38 to 74 months (depending on subgroup)		chronic pain	
Keogh 2005 ¹⁶⁵	72% not working due to pain; mean pain duration of 146.7 mos (range 16 to 685 mos)		multiple: "chronic pain syndrome"	6+ mos pain duration, no known psychiatric conditions that would interfere with the intervention
Kidner 2009 ¹⁶⁶	disability more than 4 months post-injury, lack of response to previous surgery/nonsurgical treatments, severe impairment of physical functioning		chronic disabling occupational musculoskeletal disorders	opioid status (taking opioids vs. not currently taking opioids) at start of treatment could be determined; speak English or Spanish
Kleinke 1988 ¹⁶⁷	mean duration of pain 8.4 years (range 1 to 36 years); mean number of back surgeries was 1.2; 41% were unemployed because of chronic pain		chronic back pain	
Kohles 1990 ¹⁶⁸	average 10+ months since last worked		Chronic lower back pain	prior spinal fusion
Kole-Snijders 1999 ¹⁶⁹	mean pain duration of 9.8 years (range 10 mos to 40 years); 79% receiving disability compensation (mean	included in figures for MPP population	low-back pain	inclusion: age 18-65, 6+ mos low-back pain, discrepancy b/w objective findings and pain complaints, cooperation of spouse/relative/close friend to participate in weekly spouse training; exclusion:

Table D1. Study populations (continued)

Citation	MPP Population (duration of pain, prior treatments, etc.)	Comparison Population (duration of pain, prior treatments, etc.)	Clinical Conditions	Other Inclusion and Exclusion Criteria
	duration 3.7 years); 39% received back surgery, 28% used supportive equipment for ambulation; comorbidities included 40-46% with phobias, 30% with depressive disorder			illiteracy, pregnancy, involvement in litigation concerning social disability income, alcohol or drug abuse, serious psychopathology (e.g., antisocial personality disorder, psychosis, or organic brain damage), specific medical disorders requiring medical treatment or rendering patients unable to participate in program
Koopman 2004 ¹⁷⁰	mean complaint duration 76.5 mos., mean absence from work 12.2 mos.		Lower back pain for 6+ mos.	inclusion: age 20-60, unsatisfactory results with prior treatment, sufficiently motivated to participate, some positive expectation for return to work after program, approval of insurance company and employer; exclusion: presence of a progressive illness, mental disorder, or low intelligence (defined as less than primary school and 3 years of secondary education and inability to complete the questionnaires), inability to travel
Lang 2003 ¹⁷¹	median pain duration of 12 years, 47% low-back pain, 53% low-back and leg, 26% low-back and leg below knee; 18% had previous lumbar surgery	median pain duration of 9 years, 43% low-back pain, 57% low-back and leg, 32% low-back and leg below knee; 22% had previous lumbar surgery	chronic low back pain	inclusion: seeking treatment of pain in the lumbar and/or thoracic spine with facultative irradiation cranially, caudally or ventrally, persistence of pain for at least 3 months without decreasing intensity and no need for surgical intervention. exclusion: did not give informed consent, not able to answer questionnaires independently, pain was localized over almost the whole body or history of cancer
Law 2009 ¹⁷²	mean duration of pain 6 years		77% back pain, 53% leg pain, 40% arm pain	pain of MSK origin persisting 3+ mos.; over 18 years; excluded if unable to tolerate testing procedure, had excessive hamstring muscle extensibility, required further medical, surgical, or psych investigations or interventions, had a history of drug or alcohol abuse
Lipchik 1993 ⁴⁸	chronic nonmalignant pain of 6+ mos. duration	same	chronic nonmalignant pain	no evidence of dementia or active psychosis, able to participate in active physical rehab, motivated to participate (as evidenced in evaluation interview)
Luoto 1996 ¹⁷³	at least 6 mos of chronic low back pain which had caused trouble in work and everyday life and had not reacted favorably to the outpatient physiotherapy	healthy volunteers with no musculoskeletal disorders in the previous 12 months	chronic low-back pain	aged 20-60 exclusions: LBP requiring immediate surgery, a heart or circulatory disease that would prevent them from undergoing an intensive rehabilitation, a psychiatric disorder that might interfere with the rehabilitation
Luoto 1998 ¹⁷⁴	average duration of lower-back pain was 12.1 years for men with moderate LBP, 7.8	healthy volunteers with no musculoskeletal disorders in the previous	chronic low-back pain	aged 20-60 exclusions: LBP requiring immediate surgery, a heart

Table D1. Study populations (continued)

Citation	MPP Population (duration of pain, prior treatments, etc.)	Comparison Population (duration of pain, prior treatments, etc.)	Clinical Conditions	Other Inclusion and Exclusion Criteria
	years for women with moderate LBP, 8.8 years for men with severe LBP, and 13.5 years for women with severe LBP	12 months		or circulatory disease that would prevent them from undergoing an intensive rehabilitation, a psychiatric disorder that might interfere with the rehabilitation
Lynch 1996 ¹⁷⁵	chronic nonmalignant pain of 6+ mos. (mean 45 months) duration referred for "consideration of outpatient pain management as a treatment option"	chronic nonmalignant pain of 6+ mos. (mean 34 months) duration referred for "consideration of outpatient pain management as a treatment option"	variety	
Maclaren 2006 ¹⁷⁶	average time since injury was 22.8 months, most patients had undergone no surgeries (average 0.43, range 0 to 8); all participants were receiving worker's compensation benefits; at completion of treatment, 61% had a job available to return to at prior employer		72% low back pain, 17% neck and shoulder	
Magnusson 2004 ²⁷	Chronic Daily headache for at least 6 mos.	Transformed migraine (very frequent, often daily, migraine)	headache	MPP: no ongoing headache-related litigation or Work Comp claim, no disabling medical or psychiatric condition
Man 2007 ¹⁷⁷	median pain duration 46 months (range 12-333 mos.)		58% back pain, 22% limbs	Pharma: willingness to sign informed consent chronic pain 3 mos.+, no progress in rehab despite treatment, no further option for medical or surgical treatments, reliance on medication and other aids, distress and disability due to the pain, no active major psycho disorder or primary addiction problem, no severe physical impairment, no literacy/language difficulty, agreement and commitment to participate in the programme
Mangels 2009 ¹⁷⁸	65 to 68% married; chronic back pain	67% married; chronic back pain	back pain, musculoskeletal disease (ICD-10 M00-99)	insurant at the Deutsche Rentenversicherung Bund, able to understand German; exclusion: surgery during the previous 3 months, intended treatment period of less than 3 weeks due to personal or hospital reasons, unexpectedly short admission process hindering the randomization process

Table D1. Study populations (continued)

Citation	MPP Population (duration of pain, prior treatments, etc.)	Comparison Population (duration of pain, prior treatments, etc.)	Clinical Conditions	Other Inclusion and Exclusion Criteria
Maruta 1990 ¹⁷⁹	mean duration of pain is 80 months; most had received multiple treatment types (medication, surgery, PT, traction, body casts, nerve blocks, psychotherapy, hypnosis, etc.); 43% were receiving disability compensation		multiple diagnoses	inclusion: treatment completers; exclusion: "lack of motivation to participate," related malignant disease, litigation in progress
Masuda 2005 ⁴⁰	mean duration of illness 45 mos., mean number of hospitalizations 12.4		somatoform pain disorder	
Mayer 1994 ¹⁸⁰	6+ mos. post injury; evaluated to rule out the need for additional or primary surgery		chronic low-back pain	excluded for incomplete test data, lumbar fusion, multiple surgeries, diagnoses involving more than purely lumbar disorders
Mayer 1998 ⁷⁵	(all pts treated with MPP, some additionally had either discectomy or fusion) minimum 4 mos. post-injury; all appropriate surgical or injection procedures had been performed or refused		chronically disabled patients on workers' compensation for injury	all workers' comp pts who had completed MPP b/w 1989 and 1993 were assessed for inclusion; all with either discectomy alone or spinal fusion were selected for inclusion; matched non-surgical controls were selected for each surgical pt
Mayer 2001 ¹⁸¹	none working full-time, less than 10% performing any light or part-time work; minimum 4-mos partial/total disability since work-related injury; failure of prior primary/secondary nonoperative care, failure to respond to surgical treatment (if indicated) persistence of severe functional and psychosocial barriers to recovery with ongoing health care seeking behaviors		Chronic Disabling Spinal Disorder	treatment completers only
Mayer 2006 ¹⁸²	minimum 3 mos. partial/total disability since work-related injury; failure of prior primary/secondary nonoperative care, failure to		chronic occupational spinal disorders	English or Spanish speaking or translation available

Table D1. Study populations (continued)

Citation	MPP Population (duration of pain, prior treatments, etc.)	Comparison Population (duration of pain, prior treatments, etc.)	Clinical Conditions	Other Inclusion and Exclusion Criteria
	respond to surgical treatment (if indicated); persistence of severe functional and psychosocial barriers to recovery			
Mayer 1986 ¹⁸³	referred "as failures of conventional medical/surgical care"; avg. 23.8 mos. since injury; avg. 11.6 mos. since last working	"nearly identical" to PRIDE group	chronic low back pain	authorized by insurance carrier
Mayer 1987 ¹⁸⁴	approx 25 mos. post-injury; avg. 1 surgeries; "referred as failures of conventional medical/surgical care"	avg. 21 mos. since injury; avg. 1 surgeries; "referred as failures of conventional medical/surgical care"; comparison group created as pts denied coverage by responsible insurance carrier, "almost always because of a negative policy toward 'pain clinics'; invariably a matter of policy throughout a company rather than a punitive measure directed specifically at an individual patient"	industrial low back injury	
Mayer 1988 ¹⁸⁵	approx 12 mos. since injury; "perception of previous treating physicians that the persistently disabled patient had failed prior therapeutic efforts"		chronic low-back and/or cervicothoracic disorders	
Mayer 2002 ¹⁸⁶	4+ mos. post-injury; surgical treatment ruled-out (Except the 52 surgical pts, who underwent anterior cervical fusion at one or two levels before referral to MPP)		cervical spine disorders	treatment completers only

Table D1. Study populations (continued)

Citation	MPP Population (duration of pain, prior treatments, etc.)	Comparison Population (duration of pain, prior treatments, etc.)	Clinical Conditions	Other Inclusion and Exclusion Criteria
Mayer 2008 ¹⁸⁷	average 15.5 months of disability; minimum 4-mos partial/total disability since work-related injury; failure of prior primary/secondary nonoperative care, failure to respond to surgical treatment (if indicated); persistence of severe functional limitations		Chronic Disabling Occupational Spinal Disorders	
McCracken 2005 ¹⁸⁸	89% receiving national wage replacement or financial benefit; 9.8% were doing any work outside the home; mean pain duration of 132.5 mos (range 12 to 528 mos); had previously seen an average of 6.3 different physicians about their pain, though 2% had never obtained previous, specialist medical consultation and treatment; 43.3% had prior surgical treatment for pain		multiple: "chronic pain syndrome"; pain-related distress and disability; 50% low back pain; 14% lower limb, 12% upper limb, 11% neck; 71% multiple sites	3+ mos pain duration, were not appropriate for further medical tests or invasive procedures, agreed with treatment purpose, had no known psychiatric conditions that would interfere with the intervention
Michaelson 2004 ¹⁸⁹	47% on full sick leave (another 20% on partial sick leave); mean pain duration 106 mos		low back or neck pain	exclusions: neurologic diseases, signs of brain damage, rheumatic and psychiatric diagnoses, younger than 18, older than 65, minimum pain intensity of 25 out of 100 on a VAS, pain for more than 6 mos prior to treatment
Middaugh 1988 ¹⁹⁰	mean duration of pain 55 to 60 mos.; mean number of surgeries 0.9 to 1.4		multiple: 76% of older pts and 85% of younger pts had back and neck pain	inpatient vs. outpatient determined by: distance from hospital, medication level, funding, and activity level/degree of disability
Mohler 1991 ¹⁹¹	diagnosed with craniomandibular disorder; all but one had multiple pain complaints involving neck, shoulder, back, arm, or leg; mean pain duration 30 months (range 4 mos. to 8 years)		chronic craniomandibular disorder	non-carcinogenic pain, duration 4+ mos., identified need for 2 or more multidisc services in PT, OT, psychology, and/or dentistry
Moore 1986 ²⁴	Male, 95% unemployed, 87% receiving disability		chronic pain; 53% Lower back pain,	

Table D1. Study populations (continued)

Citation	MPP Population (duration of pain, prior treatments, etc.)	Comparison Population (duration of pain, prior treatments, etc.)	Clinical Conditions	Other Inclusion and Exclusion Criteria
	compensation; average duration of pain was 14.2 years, average number of prior surgeries for pain was 3.5		17% headaches	
Norrefalk 2005 ¹⁹²	34% generalized pain or FM, 19% generalized neck and back pain, 19% cervico-brachialgia, 13% low back pain; mean absence from work 22 mos; none working at start of program; referred after all other treatments and rehab attempts had failed	43% generalized pain or FM, 29% generalized neck and back pain, 14%whiplash; mean absence from work not reported; none working at start of program	chronic pain	relevant medical and surgical treatments completed prior to referral; excluded: employed, weak knowledge of Swedish language (though interpreters were used when needed), pts with ongoing drug, narcotics, or alcohol abuse
Norrefalk 2006 ¹⁹³	34% generalized pain or FM, 19% generalized neck and back pain, 19% cervico-brachialgia, 13% low back pain; none working at start of program; referred after all other treatments and rehab attempts had failed		chronic pain	relevant medical and surgical treatments completed prior to referral; excluded: employed, weak knowledge of Swedish language (though interpreters were used when needed), pts with ongoing drug, narcotics, or alcohol abuse
Norrefalk 2007 ¹⁹⁴	referred to pain program "since every other intervention or rehabilitation measure had failed"; at least 3 months on sick-leave prior to rehab (mean = 17 mos., median = 20 mos.)	median absence from work = 19 mos.; selected from an unrelated study conducted at the Rehabilitation Centre and run by the National Swedish Insurance Board; selection criteria: performed evaluation at the same period of time as the study group concluded the rehab program, long-term follow-up information available on return-to-work, on sick leave at time of evaluation, of working age, has "long lasting pain" as main diagnosis	multiple diagnoses	only pts on sick leave included (less than 2 h per day); excluded from intervention program for inadequate knowledge of Swedish language (interpreters were used when needed), ongoing drug/narcotic/alcohol abuse, major cognitive deficit

Table D1. Study populations (continued)

Citation	MPP Population (duration of pain, prior treatments, etc.)	Comparison Population (duration of pain, prior treatments, etc.)	Clinical Conditions	Other Inclusion and Exclusion Criteria
Norrefalk 2008 ¹⁹⁵	mean 22 months sick-leave before treatment	mean 19 months sick-leave before assessment; matched pair-wise with treatment group on age, gender, origin, and time on sick-leave	chronic pain	relevant medical and surgical treatments completed prior to referral; excluded: employed, weak knowledge of Swedish language (though interpreters were used when needed), pts with ongoing drug, narcotics, or alcohol abuse
Olason 2004 ¹⁹⁶	49% had pain duration of more than 5 years, 38% one to four years duration, 13% less than 1 year; 18% working at admission		48% low-back pain, 29% post-traumatic pain, 23% "other"	over 3-yr period, pts undergoing treatment at program were randomly selected to participate in study (i.e., respond to the questionnaires); no other inclusion/exclusion criteria reported
Patrick 2004 ¹⁹⁷	disabled and not working due to pain for 3-30 months	same	low back pain	not candidates for lumbar surgery; age 18-63; not currently involved in personal injury litigation; not in pain due to pregnancy, severe vertebral fracture, etc.; not demonstrating significant levels of depression or anger
Perry 2010 ⁷⁷	mean duration of pain of 66.9 mos.; 39% quadriplegia, 61% paraplegia; 42% unemployed	mean duration of pain of 53.4 mos.; 40% quadriplegia, 60% paraplegia; 50% unemployed	Spinal Cord Injury-related chronic pain	over 18, having SCI with permanent neurologic deficit and persistent pain of 3 mos. duration or longer; exclusion: inadequate command of English to complete questionnaires, current presence of a psychotic disorder, TBI sufficient to interfere with participation in a pain management program
Pfingsten 1997 ⁷⁴	mean duration 150 months; 30% had prior back surgery; mean of 6.3 weeks of inpatient treatment in the 2 years prior to treatment; 81% not working (receiving full work compensation, mean duration of time off was 9 months)		chronic low-back pain	not described
Polatin 1989 ¹⁹⁸	average time since injury 15-36 months (depending on subgroup)		chronic low-back pain	4 comparison groups selected from all who completed pre-treatment assessment: PRIDE treatment completers who 1. were employed 1 year later, or 2. were not employed 1 year later, 3. drop outs from the PRIDE treatment program, 4. pts recommended for treatment who did not enter the program
Polatin 1997 ¹⁹⁹	average 18 mos. disability before program; primary and secondary nonsurgery care failed to resolve disability and		chronic low back pain	

Table D1. Study populations (continued)

Citation	MPP Population (duration of pain, prior treatments, etc.)	Comparison Population (duration of pain, prior treatments, etc.)	Clinical Conditions	Other Inclusion and Exclusion Criteria
Proctor 2004 ²⁰⁰	<p>pain; (further) surgery determined to be unnecessary by 2 or more physicians</p> <p>average 17.8 mos. disability before program; before rehab, >95% were totally disabled, none were working full-time; work-related injury 4+ months before study; primary and secondary nonsurgery care failed to resolve disability and pain; surgery had not resolved problem or provided relief or was not an option; severe functional limitations remained</p>		<p>chronic disabling occupational musculoskeletal disorders (CDOMD)</p>	<p>MSK injury claim without adequate recovery; speak English or Spanish</p>
Proctor 2005 ²⁰¹	<p>average 19 months since injury; work-related injury 4+ months before study; primary and secondary nonsurgery care failed to resolve disability and pain; surgery had not resolved problem or provided relief or was not an option; severe functional limitations remained</p>		<p>chronic disabling occupational musculoskeletal disorders (CDOMD)</p>	<p>speak English or Spanish</p>
Protas 2004 ²⁰²	<p>average time since injury 14-16 months (depending on subgroup); all had participated in secondary physical therapy before referral to this MPP for failure to return to work or severe ongoing pain complaints</p>		<p>chronic work-related spinal disorders</p>	<p>treatment completers only; exclusion: pts taking medication limiting heart rate response, pts not treated for a cervical or lumbar disorder</p>
Rainville 1992 ²⁰³	<p>average 17 mos. since injury; 19% prior back surgery</p>		<p>chronic low back pain</p>	<p>age 18-70, absence of surgically correctable lesion as the cause of pain or pt refusal of surgery; absence of spinal fracture, infection, or cancer as etiology of pain; absence of significant disability from other medical conditions; disability from full-time, full-duty work because of pain; reading and writing comprehension of English</p>

Table D1. Study populations (continued)

Citation	MPP Population (duration of pain, prior treatments, etc.)	Comparison Population (duration of pain, prior treatments, etc.)	Clinical Conditions	Other Inclusion and Exclusion Criteria
Rainville 1993 ²⁰⁴	average 17 mos. since injury; 19% prior back surgery	average 22 mos. since injury; 13% prior back surgery	chronic low back pain	age 18-70, absence of surgically correctable lesion as the cause of pain or pt refusal of surgery; absence of spinal fracture, infection, or cancer as etiology of pain; absence of significant disability from other medical conditions; disability from full-time, full-duty work because of pain; reading and writing comprehension of English
Robbins 2003 ³⁸	not reported	not reported	"heterogeneous sample of chronic pain diagnoses"	201 patients started the program, 127 successfully completed; major reason for dropping out (78%) was program noncompliance; of 127 successful completers, 65 were reached for 1-year follow-up; of the 65, 9 were early graduates because of significant progress at midpoint evaluation; of remaining 56, 15 had insurance coverage that carved out physical therapy from the interdisciplinary program--these patients form the control group
Rome 2004 ²⁰⁵	average 94 mos. pain duration (range 4 mos. to 58 years), half had previously received treatment in a formal pain clinic; all reasonable medical and surgical options for symptomatic relief must have been explored pre-admission		multiple diagnoses	exclusion: non-pain diagnosis (e.g., chronic fatigue), 18 pts who came directly from addiction rehab (excluded because no pre-opioid withdrawal baseline data were available)
Sanders 1993 ²⁶	average pain duration of 5.25 years, average pain-related surgeries of 0.45, 43% receiving compensation for pain		varied: 42% low-back pain, 21% cervical back, 8% headache, 23% upper or lower extremity, 6% other pain	
Scerri 2006 ²⁰⁶	at least 7 weeks' sick leave at referral or 12 weeks' over the past 2 years; chronic low-back pain		chronic low back pain	expected benefits from returning to work after program, age 18-61, ability to understand and speak French; exclusion: acute neurological deficit, severe low back pain or sciatica, pregnancy, acute inflammatory rheumatic disease, infectious discitis, spinal fracture within past 3 months, osteoporosis, tumor, severe heart failure or respiratory failure, current involvement in litigation related to low back pain

Table D1. Study populations (continued)

Citation	MPP Population (duration of pain, prior treatments, etc.)	Comparison Population (duration of pain, prior treatments, etc.)	Clinical Conditions	Other Inclusion and Exclusion Criteria
Scharff 1994 ²⁵	recurrent headaches, mean duration 19.3 years	recurrent headaches, mean duration 15.9 years	recurrent headache, majority Migraine or Rebound	comparison group was 39 pts referred for treatment who declined due to time constraints, commute time, or lack of insurance coverage
Skinner 1990 ²⁰⁷	duration of pain from 1 to 12 years; all patients failed to respond to standard conventional treatments over a number of years and showed no significant change during baseline period of observation		48% chronic low back pain (mechanical instability), 15% Cervical Spondylosis	age 18-70, major continuing disability from chronic non-malignant pain despite all appropriate physical investigations and treatments having been tried; without "marked learning difficulties," without past history of serious mental illness, fluent in English, able to make their own way to the hospital
Skouen 2002 ²⁰⁸	long-term sick-listed employees with MSK pain (on sick leave for at least 8 weeks or not currently on sick-leave, but sick-listed for at least 2 months per year for the last 2 years for MSK pain)	same	chronic low-back pain	hold permanent jobs, be sick-listed more than 50% exclusions: active rheumatologic disease, progressive neurologic disease, serious cardiac or other internal medical conditions, decreased lung capacity, malignant basic diseases, acute traumas, infections, acute vascular catastrophes, pregnant, insufficient knowledge of Norwegian language, loss of vision or hearing, registered substance abusers
Skouen 2006 ²⁹	long-term sick-listed employees with MSK pain (on sick leave for at least 8 weeks or not currently on sick-leave, but sick-listed for at least 2 months per year for the last 2 years for MSK pain)	same	Chronic Widespread Pain	hold permanent jobs, be sick-listed more than 50% exclusions: active rheumatologic disease, progressive neurologic disease, serious cardiac or other internal medical conditions, decreased lung capacity, malignant basic diseases, acute traumas, infections, acute vascular catastrophes, pregnant, insufficient knowledge of Norwegian language, loss of vision or hearing, registered substance abusers
Snow 1988 ²⁰⁹			Chronic Pain syndrome	exclusions: operable medical conditions, psychotic states, malingering
Snow 1990 ²¹⁰	multi-year history of pain in multiple locations; no relief from chiropractic, outpatient PT		multiple pain locations including lower back, neck, arms, legs, feet	
Spinhoven 2004 ²¹¹	mean pain duration of 9.8 years (range 10 mos to 40 years); 79% receiving disability compensation (mean duration 3.7 years); 39%	included in figures for MPP population	low-back pain	inclusion: age 18-65, 6+ mos low-back pain, discrepancy b/w objective findings and pain complaints, cooperation of spouse/relative/close friend to participate in weekly spouse training; exclusion: illiteracy, pregnancy, involvement in litigation

Table D1. Study populations (continued)

Citation	MPP Population (duration of pain, prior treatments, etc.)	Comparison Population (duration of pain, prior treatments, etc.)	Clinical Conditions	Other Inclusion and Exclusion Criteria
	received back surgery, 28% used supportive equipment for ambulation; comorbidities included 40-46% with phobias, 30% with depressive disorder			concerning social disability income, alcohol or drug abuse, serious psychopathology (e.g., antisocial personality disorder, psychosis, or organic brain damage), specific medical disorders requiring medical treatment or rendering patients unable to participate in program
Stans 1989 ²¹²	mean duration of pain 7.4 years (range 2 to 25 years); 51% vocationally disabled, 14% unemployed		54% low-back pain	exclusion: currently awaiting or being considered for a specific medical, technical or surgical intervention; pts with severe psychiatric disturbances; pain related to a malignant process; pain of less than 6 mos duration inclusion: freely accepted philosophy of the program and motivated to take up a more active attitude; continued to suffer despite multiple treatment interventions
Sterner 2001 ²¹³	Duration of pain 3-12 months	N/A	chronic symptoms of Whiplash Associated Disorders (Quebec Task Force WAD 1 to 3) with onset within 3 days of injury	age 18-65; no former neck/shoulder complaints, no indication of brain injury, no severe or systemic debilitating diseases; no indication of drug abuse or abuse of analgesics; no difficulty understanding Swedish
Storro 2004 ²¹⁴	on sick-leave for pain (average sick-leave = 6 mos.)	on sick-leave for pain (average sick-leave = 6 mos.)	Non-specific neck and shoulder pain, lower back pain, lower back pain with radiating pain	
Suman 2009 ²⁰	mean duration of symptoms 9.8 years; 48% currently employed		Fibromyalgia	no glucocorticoids or immunosuppressive agents for at least 3 months before study; exclusions: symptoms of psychiatric disorders which would prevent compliance with daily requirements of program (e.g., psychosis, OCD, other personality disorders); medical disease which prevented physical exercise, unwilling to stop analgesic medications
Suoyrjo 2008 ²¹⁵	rate of very long (more than 21 days) sickness spells before rehab: 26.8 per 100 person-years for back-pain rehabilitees, 15.4 for neck-pain rehabilitees	rate of very long (more than 21 days) sickness spells before rehab: 9.5 per 100 person-years	chronic back or neck pain	full-time public sector employees in 10 towns in Finland exclusions: excluded those at work less than three months in the year the rehab started, those not in service four years after rehab, those granted rehab for MSK reasons other than chronic back or neck pain,

Table D1. Study populations (continued)

Citation	MPP Population (duration of pain, prior treatments, etc.)	Comparison Population (duration of pain, prior treatments, etc.)	Clinical Conditions	Other Inclusion and Exclusion Criteria
Tollison 1985 ²¹⁶	average 32 months duration (range 5 to 96); average 2.1 major back operations		low back pain	those at work less than 3 months in a randomly selected year plus or minus three years between 1994 and 2002 no significant clinical evidence of surgically or medically remediable pain; cooperation in psychological and physical examination and testing; cooperation and active involvement of spouse and family; staff agreement that pt is motivated to reduce pain and disability; no debilitating psychologic/psychiatric disturbance
Tollison 1989 ²¹⁷	6+ months duration (avg. 409 days); 20% had undergone back surgery	acute pain pts were also assessed, but no further info will be abstracted here	low back pain	no significant clinical evidence of surgically or medically remediable pain; cooperation in psychological and physical examination and testing; cooperation and active involvement of spouse and family; staff agreement that pt is motivated to reduce pain and disability; no debilitating psychologic/psychiatric disturbance
Tollison 1990 ²¹⁸	22 to 25 months pain duration, average 1.1 to 1.3 major back surgeries		low back pain	study compared compensated vs. non-compensated pts
Trief 1995 ²¹⁹	average duration 2 to 4 years (minimum 6 mos.); "have had the full gamut of medical interventions with little or no success and are identified by their referring physicians and the program physician as treatment resistant. As a group, they represent the most intransigent subgroup of chronic back-pain syndrome patients, with 90% unemployed and 95.7% on compensation/disability."		chronic low back pain	Exclusions: psychosis, less than 6 mos. pain duration; for this study, pts with no family or who were living alone were excluded
Turk 1998 ¹²	mean FMS duration of pain was 117 months		Fibromyalgia	met 1990 American College of Rheumatology classification criteria for FMS
Turner-Stokes 2003 ⁷⁶	10.26 years average "chronicity," 23% on sick leave	6.76 years average "chronicity," 23% on sick leave	chronic pain; 95% pain centered on the spine	pain 6+ mos, pt still actively seeking help; age 18+, failed conventional treatment, able to get to clinic without hospital transport, no major changes in medical management anticipated in the next 6 mos, acceptance of the program's philosophy

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Table D1. Study populations (continued)

Citation	MPP Population (duration of pain, prior treatments, etc.)	Comparison Population (duration of pain, prior treatments, etc.)	Clinical Conditions	Other Inclusion and Exclusion Criteria
van Wilgen 2009 ²²⁰	chronic pain at least one year plus severe disuse syndrome; mean 8 years pain duration; mean 5 prior medical specialists consulted before MPP; 54% receiving disability pension	Same population	chronic pain, severe disuse syndrome; 38% back and leg pain, 20% neck/shoulder/arm, 19% total body or body side; 15% back pain and/or neck pain	inclusion: chronic pain longer than 1 year, not suitable for treatment in primary care, severe disuse syndrome, full agreement of the patient and the team, informed consent; exclusion: ongoing medical treatment, nociceptive pain, persistent cognition of a somatic cause for pain, requests/demands for additional advanced medical diagnostics
Vendrig 1999 ²²¹	mean pain duration 46.3 months; mean disability time 13.8 months; 22% had prior spinal surgeries		chronic back pain	pain duration at least 3 mos; no structural pathology of spine
Vendrig 2000 ²²²	duration: at least 3 months (mean 47.6 mos.);	N/A	no structural pathology of spine (moderate degenerative changes of the intervertebral disc not considered structural pathology)	2 pts excluded due to invalid MMPI-2 scores (VRIN scale scores over 80)
Vendrig 2000 ²²³	mean duration of symptoms 20.8 mos; mean duration of absenteeism due to symptoms was 15.7 mos.		chronic symptoms from whiplash injury	6+ mos since injury; partially or completely unable to work due to symptoms; no symptoms or signs of an objective neurologic deficit detected at physical exam or with imaging
Verra 2009 ²²	12% employed full time, 43% employed part time; 27% pain duration less than 5 years, 4% pain duration less than 1 year		fibromyalgia	failed outpatient treatment, FM of at least 6 months duration; willingness to learn behavioral patterns and motivation to participate in graded activity exercise programs; ability to formulate realistic functional goals, sufficient cognitive abilities and German language skills to understand the content of the interventions, agreement/informed consent exclusion: severe somatic illness requiring specific treatment (e.g., cancer, inflammatory rheumatic disease, neurologic disease, post-surgery pain); manifest psychiatric disorder such as dementia, psychosis, suicidality
Vines 1996 ²²⁴	average pain duration of 9+ years (range 2 months to 32		multiple; 57% spine-related	excluded for medical or psychiatric problems not under control; "if substance abuse is an issue, pain

Table D1. Study populations (continued)

Citation	MPP Population (duration of pain, prior treatments, etc.)	Comparison Population (duration of pain, prior treatments, etc.)	Clinical Conditions	Other Inclusion and Exclusion Criteria
	years); no further useful medical or surgical interventions; experiencing significant difficulty in other areas of life, such as daily activity, emotional, vocational, or social functioning			rehabilitation is delayed until the substance abuse has been treated
Vines 2000 ²²⁵	average pain duration of 93 months (range 8 to 420); no further useful medical or surgical interventions		back pain	able to read/write English; no current cancer, HIV/AIDS, pregnancy, or recent birth; not currently abusing alcohol; no history of psychiatric disease; aged 18-65
Vollenbroek-Hutten 2004 ²²⁶	median pain duration 72 months; mean visits to a PT in 6 mos. before program = 15	median pain duration 48 months; mean visits to a PT in 6 mos. before program = 11	chronic aspecific low back pain	pain duration longer than 3 months, age 18-60, no back surgery in past 3 months; exclusion: structural pathology, medical contraindication for physical training
Vowles 2004 ²²⁷	mean pain duration of 21.5 months (range 3 to 115); none of the patients had successfully returned to work since injury; all pts had sustained work-related injuries and were unemployed and receiving Workman's Comp at onset of treatment; 53% had a job available with prior employer following treatment		68% low back pain	for admission, must have 90+ days pain, no psychotic symptoms, explicit goal of improving functioning and/or returning to work; exclusion: requiring surgical intervention
Vowles 2007 ²²⁸	mean pain duration of 96 mos (range 15 to 720 mos)		40% low back pain, 16% full body, 12% lower limb, 11% upper limb, 11% neck; 76% multiple sites	not described
Vowles 2008 ²²⁹	76.3% unemployed, 76.6% receiving disability or wage replacement allowance; median pain duration was 96 mos (range 8 to 516 mos); 52% of patients had a general, nonspecific diagnosis (e.g., chronic pain syndrome, musculoskeletal pain,		46% low back pain, 18% shoulder/arms, 12% legs/pelvic, 3% neck; 57% multiple pain sites	significant levels of pain-related distress and disability, agreement with the rehabilitative (as opposed to curative) goals of treatment; no further medical tests of procedures required; no conditions that could interfere with participation in a group-based treatment program (i.e., impaired neuropsychological functioning, poorly controlled psychiatric conditions)

Table D1. Study populations (continued)

Citation	MPP Population (duration of pain, prior treatments, etc.)	Comparison Population (duration of pain, prior treatments, etc.)	Clinical Conditions	Other Inclusion and Exclusion Criteria
Vowles 2010 ²³⁰	postsurgical pain), 36% diagnosed with FM 73% unemployed, 73% receiving disability or wage replacement allowance; median pain duration was 96 mos (range 8 to 360 mos)		44% low back pain, 21% upper extremity, 11% lower extremity, 3% neck; 55% multiple pain sites	not reported
Walsh 2002 ²³¹	referred from Pain Clinic and Orthopaedic Departments at King's Mill Centre Hospital (48% from each department); "very severe disability" at referral time		chronic low-back pain	lower-back pain for 12+ mos; disability primarily caused by low-back pain as perceived by pt and assessor; pt positively opted in. Exclusion: conditions requiring individual medical, surgical, or psychological treatment; pending investigations or treatment for low back pain; pt not willing to participate; major disability due to factors other than low back pain; age <18 years; participation in a related low back pain program during preceding 6 mos
Walsh 2004 ²³²	12+ months pain in lower back		low-back pain	Study inclusion: Completed treatment; exclusion criteria: conditions requiring "individual medical, surgical or psychological treatment, pending investigations or treatment for low back pain, pt not willing to participate in program, major disability caused by factors other than low-back pain, age younger than 18 years, participation in a related low-back pain program within preceding 6 months"
Wang 2008 ⁴⁷	all pts had disabling pain of at least 3 months duration that led to sick leave of at least 6 weeks; mean duration of pain 20 months		chronic low back pain	chronic low-back pain as major symptom, age between 18 and 65, adequate command of "domestic language," specific etiologies of the neck or lower back pain were excluded (e.g., tumor, trauma, inflammatory disease or infection, radicular sensorimotor deficits in upper or lower extremity, severe degenerative changes, structural pathology of the lumbar spine), rheumatological disease, serious cardiopulmonary, vascular, or other internal medical conditions, any sensorimotor and/or neurological deficits in the lower extremity, spinal surgery in the year before admission to treatment, any other major pain location; for this study, patients with medications that potentially influence levels of inflammatory parameters were excluded (NSAIDs, aspirin, corticosteroids) within the 4 weeks prior to the study

Table D1. Study populations (continued)

Citation	MPP Population (duration of pain, prior treatments, etc.)	Comparison Population (duration of pain, prior treatments, etc.)	Clinical Conditions	Other Inclusion and Exclusion Criteria
Wasan 2004 ²³³	chronic pain for at least 2 years; multiple medication trials and/or procedural treatments for chronic pain; psychiatric comorbidities: Major Depression (MDD) and Pain associated with psychological factors and a general medical condition (PAPFGMC)		most frequent pain diagnosis: low back (just under half)	
Williams 1993 ²³⁴	mean duration of pain 10.5 years (range 1 to 47 years; 48% had received at least one operation for pain; 15% were employed full or part time; 13% had unresolved compensation claims		chronic pain: 68% spinal pain; 16% torso pain	<p>Included with at least two of the following: widespread disruption in activity (except work) owing to pain; habitual overactivity leading to increased pain; use of excessive medication related to pain problems (regular use of analgesics and/or sedatives for more than 6 mos w/o adequate relief); high affective distress score on assessment or clear signs or reports of emotional distress attributed by the patient to pain; use of unnecessary aids, such as crutches or a corset, assessed during medical examination by the anaesthetist; high levels of reported or observed pain behaviour; work reduced, impaired or ceased owing to pain.</p> <p>Patients were excluded if they fulfilled one of the following criteria: cannot use English, written or spoken; cannot climb stairs; current psychotic illness; unavailable for a four week period; suitable for further physical treatment, assessed during medical examination; pain for less than one year; less than 18 years old; currently using opioid analgesics prescribed as treatment for drug dependence, or not prescribed for patient.</p>
Williams 1999 ⁴⁹	Referred from pain clinics and orthopedic services when all attempts to resolve the pain problem were exhausted without significant benefits, and multicomponent rehabilitation was not available locally.	waitlist control population information included with "randomized pts"	Chronic pain: 79% to 86% had MSK pain, 35% to 46% of pts attributed their pain to an accident	Patients were required to meet two of the following criteria for eligibility for treatment: work impaired by pain; non-work activity impaired by pain; habitual overactivity/underactivity cycles; significant distress attributable to pain; overuse of analgesic or psychotropic drugs for pain; overuse of aids; and high levels of reported or observed pain behavior.

Table D1. Study populations (continued)

Citation	MPP Population (duration of pain, prior treatments, etc.)	Comparison Population (duration of pain, prior treatments, etc.)	Clinical Conditions	Other Inclusion and Exclusion Criteria
	Randomized pts: mean pain duration of 108 mos; 73% had been hospitalized for pain; 49% had 1+ surgeries for pain; 12% employed and working; 63% on disability welfare			Patients were excluded if they were suitable for further medical or physical treatment for pain; were currently psychotic or suicidal; unable to read or write English; if they had pain for less than one year; were under 18 years old; currently using opioids illegally; or unable to climb one flight of stairs (necessitated by the treatment site).
	Elective inpatients: mean pain duration of 126 mos; 79% had been hospitalized for pain; 49% had 1+ surgeries for pain; 22% employed and working; 59% on disability welfare			
	Elective outpatients: mean pain duration of 127 mos; 59% had been hospitalized for pain; 36% had 1+ surgeries for pain; 37% employed and working; 53% on disability welfare			
Wong 2009 ^{23b}	average pain duration 9.9 years, range 1-38 years; completed all medical investigations and planned treatments for pain		non-progressive, non-inflammatory chronic conditions	social, physical, and psychological functioning significantly affected by chronicity of pain; all medical and surgical treatments and investigations completed before referral with little to no benefit gained from those treatments; only non-progressive, non-inflammatory chronic MSK conditions (FM, back and neck pain, osteoarthritis, etc.) included; pts with major psychiatric disorders that would interfere with group participation are excluded (schizophrenia, compulsive-obsessive disorders, major anxiety and depressive disorders); "as part of self-management ,they must be able to find their own transport to the PMP," able to communicate "reasonably well" in English; able to look after their own personal hygiene; committed to learning self-management skills and strategies, able to attend introductory session and at least 6 of the 8 sessions

Table D1. Study populations (continued)

Citation	MPP Population (duration of pain, prior treatments, etc.)	Comparison Population (duration of pain, prior treatments, etc.)	Clinical Conditions	Other Inclusion and Exclusion Criteria
Wormgoor 2008 ²³⁶	median pain duration of 24 to 60 months (depending on diagnosis group); median current sick listing of 77.5 to 80 days		chronic specific back pain (caused by a specific pathophysiological mechanism), chronic non-specific back pain, chronic widespread pain	exclusions: no-longer sick-listed, had a sickness grade of less than 75%, received a disability pension, were pregnant, were on sick leave due to back-surgery, were taking medication influencing heart rate response, or were employed as civil servant; pts with serious functional disability (somatic or psychological) were referred to a different program
Wright 1999 ²³⁷	4+ mos. post-injury; surgical treatment (or further surgical treatment) ruled-out; average 16 to 20 months post-injury		chronically disabled patients with work-related spine disorders of cervical or lumbar spine	compensation injury (i.e., work-related); no extremity-only injuries
Zunin 2009 ²³⁸	duration at least 1 year; referred for screening for following reasons: "pain that is disproportionate to that of the diagnosis, recovery time exceeding expected resolution, sustained or increased use of triptans and/or opiate analgesics, prolonged or frequently recurring absenteeism, noncompliance with previous medical treatment plans, history of frequent changes in physician, history of multiple concurrent physicians, high emergency department utilization, and/or a history of poorly coordinated care"	N/A	multiple diagnoses	study includes only program completers

Table D2. Treatment components

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
Alaranta 1994 ⁹¹	baseline medical exam by physiatrist, team carrying out program included physician	cognitive-behavioral disability management groups (relaxation, visual images, etc.)	cardiovascular endurance exercises, muscular strength and endurance exercises, stretching; no passive PT	5 hours of discussion groups per week including improving skills to cope with pain, problem solving, etc.	included group therapy (no info on group size)	3 weeks home-based exercise post-baseline exam; 3 weeks inpatient, 42+ hours per week	3 week inpatient "current national type" treatment; passive physical therapy (massage, electrical therapies, traction, etc.), muscle training, pool exercises, back school education. Less strenuous than AKSELI (15-20 hr/wk physical activity vs. 37 hr/wk for AKSELI); no stress management group provided
Altmaier 1992 ⁹²	inpatient program at a hospital; medications monitored to allow only aspirin and Tylenol	operant conditioning on exercise behaviors, relaxation training, biofeedback training, cognitive-behavioral coping skills, daily homework exercises	twice-daily PT and daily aerobic fitness	daily education on mechanisms of pain; vocational rehab		3 weeks inpatient	same as MPP EXCEPT behavioral component (not provided)
Andary 1997 ⁹³	program direct by a physiatrist	psychological services facilitated the development of coping strategies and goal achievement	PT focused on maximizing physical function through building strength, endurance, and flexibility	Chronic pain education sessions dealt with understanding chronic pain physiology and life skills development	nutrition, vocational services	9 hours per week; treatment plans reviewed bimonthly; completion contingent on achievement of vocational/avocational goals (mean 459 days	

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
						for TBI pts, 295 days for non-TBI)	
Angst 2006 ¹⁸	regular medical consultations (1 hour/week) including drug therapy	individual psychotherapy including cognitive behavioral therapy; participation in a behavioral therapeutically oriented pain coping/management group, creative activities, relaxation therapy	5-6 daily sessions of individual, active PT (average 5 hours per week); aerobic endurance training	3 hours per week of education about pathophysiology and management of chronic disabling pain	traditional Chinese medicine, mainly Qigong (3 hours per week)	4-weeks	
Angst 2009 ²¹	regular medical consultations (1 hour/week) including drug therapy	individual psychotherapy including cognitive behavioral therapy; participation in a behavioral therapeutically oriented pain coping/management group, creative activities, relaxation therapy	5-6 daily sessions of individual, active PT (average 5 hours per week); aerobic endurance training; movement analysis (Cary Rick method)	3 hours per week of education about pathophysiology and management of chronic disabling pain	traditional Chinese medicine, mainly Qigong (3 hours per week)	4-weeks	Standard inpatient rehab at the same clinic: very similar to MPP, except less behavioral content (only relaxation therapy and optional individual CBT); length is 3 weeks rather than four; much less interdisciplinary communication (30 minutes for 20 patients vs. 2 hours for 6 patients in the MPP)
Bailey 2003 ⁹⁴	nursing assessment daily, physician rounds weekly	group psychotherapy daily; some also received individual psychotherapy, biofeedback, hypnotherapy,	daily PT, daily OT	2 daily psychoeducational group sessions	acupuncture	8 hrs per day/5 days per week; for 4-8 weeks (mean 5.9 weeks)	

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
Bendix 1998 ⁹⁵	initial exam by a physician; education included spinal anatomy and pathology, sexuality pain, nutrition, and medication	marital/family therapy daily group therapy and relaxation, average of one individual counseling session per week; pts urged to "take greater responsibility for coping with pain, set realistic personal goals, change the negative sensation of pain into a more positive way of living, and give themselves credit for their achievements"	daily aerobics, weight training, work simulation, work hardening, stretching, active recreation	daily theoretical class (see "medical" for content)	carried out in groups of seven with pts in varying stages within the same group (i.e., "third-weekers" "inspire the 'first-weekers' to endure and encourage them to continue. This also gives the 'third-weekers' a responsibility and authority in relation to the beginners, which in turn increases self-confidence"	3 weeks, 39 hours per week, intensive portion followed by 6 hours once per week for 3 weeks	one control group of no treatment, 2 control groups in less intensive programs totaling 24 hours of treatment time: active physical training and traditional back school OR active combined psycho-physical program
Bendix 1995 ⁸¹	initial exam by a physician; education included spinal anatomy and pathology, sexuality pain, nutrition, and medication	daily group therapy and relaxation, average of one individual counseling session per week; pts urged to "take greater responsibility for coping with pain, set realistic personal goals, change the negative sensation of pain	daily aerobics, weight training, work simulation, work hardening, stretching, active recreation	daily theoretical class (see "medical" for content)	carried out in groups of seven with pts in varying stages within the same group (i.e., "third-weekers" "inspire the 'first-weekers' to endure and encourage them to continue. This also gives the 'third-weekers' a responsibility and authority in relation to the beginners, which in turn increases self-	3 weeks, 39 hours per week, intensive portion followed by 6 hours once per week for 3 weeks	2 less intensive programs totaling 24 hours of treatment time: active physical training and traditional back school OR active combined psycho-physical program

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
		into a more positive way of living, and give themselves credit for their achievements"			confidence"		
Bendix 1996 ⁴³	initial exam by a physician; education included spinal anatomy and pathology, sexuality pain, nutrition, and medication	daily group therapy and relaxation, average of one individual counseling session per week; pts urged to "take greater responsibility for coping with pain, set realistic personal goals, change the negative sensation of pain into a more positive way of living, and give themselves credit for their achievements"	daily aerobics, weight training, work simulation, work hardening, stretching, active recreation	daily theoretical class (see "medical" for content)	carried out in groups of seven with pts in varying stages within the same group (i.e., "third-weekers" "inspire the 'first-weekers' to endure and encourage them to continue. This also gives the 'third-weekers' a responsibility and authority in relation to the beginners, which in turn increases self-confidence"	3 weeks, 39 hours per week, intensive portion followed by 6 hours once per week for 3 weeks	no treatment from center: could go anywhere else for treatment
Bendix 1997 ⁷⁹	initial exam by a physician; education included spinal anatomy and pathology, sexuality pain, nutrition, and medication	daily group therapy and relaxation, average of one individual counseling session per week; pts urged to "take greater responsibility for coping with pain, set realistic	daily aerobics, weight training, work simulation, work hardening, stretching, active recreation	daily theoretical class (see "medical" for content)	carried out in groups of seven with pts in varying stages within the same group (i.e., "third-weekers" "inspire the 'first-weekers' to endure and encourage them to continue. This also gives the 'third-weekers' a responsibility and	3 weeks, 39 hours per week, intensive portion followed by 6 hours once per week for 3 weeks	2 less intensive programs totaling 24 hours of treatment time: active physical training and traditional back school OR active combined psycho-physical program

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
		personal goals, change the negative sensation of pain into a more positive way of living, and give themselves credit for their achievements"			authority in relation to the beginners, which in turn increases self-confidence"		
Bendix 1998 ⁹⁶	initial exam by a physician; education included spinal anatomy and pathology, sexuality pain, nutrition, and medication	daily group therapy and relaxation, average of one individual counseling session per week; pts urged to "take greater responsibility for coping with pain, set realistic personal goals, change the negative sensation of pain into a more positive way of living, and give themselves credit for their achievements"	daily aerobics, weight training, work simulation, work hardening, stretching, active recreation	daily theoretical class (see "medical" for content)	carried out in groups of seven with pts in varying stages within the same group (i.e., "third-weekers" "inspire the 'first-weekers' to endure and encourage them to continue. This also gives the 'third-weekers' a responsibility and authority in relation to the beginners, which in turn increases self-confidence"	3 weeks, 39 hours per week, intensive portion followed by 6 hours once per week for 3 weeks	one control group of no treatment, 3 control groups of less intensive programs: 2 totaling 24 hours of treatment time: active physical training and traditional back school OR active combined psycho-physical program; 1 totaling 48 hours total treatment time of pure physical training, offered 2 hours, 3 times per week, for 8 weeks
Bendix 1998 ⁹⁷	initial exam by a physician; education included spinal anatomy and pathology, sexuality pain, nutrition, and	daily group therapy and relaxation, average of one individual counseling session per week; pts urged to "take	daily aerobics, weight training, work simulation, work hardening, stretching, active	daily theoretical class (see "medical" for content)	carried out in groups of seven with pts in varying stages within the same group (i.e., "third-weekers" "inspire the 'first-weekers' to endure and encourage them	3 weeks, 39 hours per week, intensive portion followed by 6 hours once per week for 3 weeks	one control group of no treatment, 2 control groups in less intensive programs totaling 24 hours of treatment time: active physical training and traditional back school

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
	medication	greater responsibility for coping with pain, set realistic personal goals, change the negative sensation of pain into a more positive way of living, and give themselves credit for their achievements"	recreation		to continue. This also gives the 'third-weekers' a responsibility and authority in relation to the beginners, which in turn increases self-confidence"		OR active combined psycho-physical program
Bendix 2000 ⁷⁸	initial exam by a physician; education included spinal anatomy and pathology, sexuality pain, nutrition, and medication	daily group therapy and relaxation, average of one individual counseling session per week; pts urged to "take greater responsibility for coping with pain, set realistic personal goals, change the negative sensation of pain into a more positive way of living, and give themselves credit for their achievements"	daily aerobics, weight training, work simulation, work hardening, stretching, active recreation	daily theoretical class (see "medical" for content)	carried out in groups of seven with pts in varying stages within the same group (i.e., "third-weekers" "inspire the 'first-weekers' to endure and encourage them to continue. This also gives the 'third-weekers' a responsibility and authority in relation to the beginners, which in turn increases self-confidence"	3 weeks, 39 hours per week, intensive portion followed by 6 hours once per week for 3 weeks	36 hours total treatment time of pure physical training, offered at a frequency of 1.5 hours, 3 times per week, for 8 weeks
Bliokas 2007 ⁹⁸	presenters included medical and dietetics	presenters included psychology discipline (among	graded activity including 1-hour exercise session of	psychoeducational group therapy (see other components for content)	approximately half the MPP group got an additional "Graded Exposure"	8 weeks, 2 days per week (total 66.5 hours)	wait-list for treatment program

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
	disciplines (among others); education items included medication issues	others); education items included stress management, problem-solving, cognitive restructuring, changing maladaptive behaviors, effective communication, goal-setting and monitoring and achieving goals; 45-minute relaxation training session every day of attendance	walking and stretching, supervised by PT; OT, PT, and exercise science presentations		component which included individual meetings with a psychologist to identify their most-feared "avoided activities" which were then approached using cognitive-behavioral graded exposure techniques		
Buchner 2006 ⁹⁹	initial evaluation including clinical exam, radiographic exam, and MRI of the cervical or lumbar spine	improve skills for individual coping and emotional control; psychotherapy, behavioural therapy, both individual and group sessions	physical exercises, ergonomic training, education in back-protection techniques and protective behaviour; goal to increase the pts' activity levels at home and day-to-day functioning to facilitate a return to the workplace	included with physical and behavioral		3 weeks, 8-hrs per day, 5 days per week	
Buchner 2007 ¹⁰⁰	initial evaluation including clinical exam, radiographic	improve skills for individual coping and emotional control;	physical exercises, ergonomic training,	included with physical and behavioral		3 weeks, 8-hrs per day, 5 days per week	

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
	exam, and MRI of the cervical or lumbar spine; some education sessions delivered by orthopedic surgeon; daily sessions with physician	psychotherapy, behavioural therapy, both individual and group sessions; daily sessions with psychologist	education in back-protection techniques and protective behaviour; goal to increase the pts' activity levels at home and day-to-day functioning to facilitate a return to the workplace				
Buchner 2007 ¹⁰¹	initial evaluation including clinical exam, radiographic exam, and MRI of the cervical or lumbar spine; some education sessions delivered by orthopedic surgeon; daily sessions with physician	improve skills for individual coping and emotional control; psychotherapy, behavioural therapy, both individual and group sessions; daily sessions with psychologist	physical exercises, ergonomic training, education in back-protection techniques and protective behaviour; goal to increase the pts' activity levels at home and day-to-day functioning to facilitate a return to the workplace	included with physical and behavioral		3 weeks, 8-hrs per day, 5 days per week	
Burnham 2010 ²³	initial 2-hr medical care assessment, group discussion facilitated by psychologist or nurse; physician lectures included on pain	group therapy facilitated by psychologist; 1-hr group education and psychotherapy session; psychologist lectures on sleep hygiene, coping	exercise specialist and physical therapist offered education on adverse effects of deconditioning and the	included with others		once per week for 5 hrs each time; duration 2-3 months depending on individual progress; pts discharged when goals met, progress	group of 4-6 pts, used book <i>Managing Pain Before it Manages You</i> by M Caudill as basis of weekly group discussion

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
	pathophysiology and medications	strategies, stress and mood management	dynamics of pain and maintaining a health spine			plateaued, or pt was non-compliant	
Burns 2000 ¹⁰²	"treatment by a physician"	individual (2 hrs per week) and group (2 hrs per week) CBT, biofeedback	5 hrs per day PT and OT aimed at increasing physical capacity through weight training, treadmill use, stretching, walking outdoors	"education about pain"		4 weeks, 5 days per week	
Burns 1998 ¹⁰³	"treatment by a physician"	individual (2 hrs per week) and group (2 hrs per week) CBT, biofeedback	5 hrs per day PT and OT aimed at increasing physical capacity through weight training, treadmill use, stretching, walking outdoors	"education about pain"		4 weeks, 5 days per week	
Burns 1998 ¹⁰⁴	"treatment by a physician"	individual (2 hrs per week) and group (2 hrs per week) CBT, biofeedback	5 hrs per day PT and OT aimed at increasing physical capacity through weight training, treadmill use, stretching, walking outdoors	"education about pain"		4 weeks, 5 days per week	

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
Burns 2003 ¹⁰⁵	medication management by a physician	individual and group CBT, approx 2 hours per week geared toward decreasing maladaptive thoughts and appraisals of pain and disability, teaching adaptive coping skills	PT and OT approximately 5 hours per day	"education about pain"		4 weeks, 5 days/week	
Burns 2003 ¹⁰⁶	medication management by a physician	individual and group CBT, approx 2 hours per week geared toward decreasing maladaptive thoughts and appraisals of pain and disability, teaching adaptive coping skills	PT and OT approximately 5 hours per day	"education about pain"		4 weeks, 5 days/week	
Burns 2005 ¹⁰⁷	medication management by a physician	individual and group CBT, approx 2 hours per week geared toward decreasing maladaptive thoughts and appraisals of pain and disability, teaching adaptive coping skills	PT and OT approximately 5 hours per day	"education about pain"		4 weeks, 5 days/week	
Carleton 2010 ¹⁰⁸	initial clinical exam; treatment team included pt's family	1 hr per week of psychological counseling; 1 hr of relaxation-	graded activity, general conditioning, work-	included with medical and behavioral		6-weeks	

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
	physician, education on pain, process of tissue healing, and how fitness and nutrition impact healing	based pain management	hardening; team included PT, OT, kinesiologist				
Cassisi 1989 ¹⁰⁹	program run by Neurosurgical Surgery department, "intense, highly integrated, aggressive program of physical medicine . . . "; "detoxification is ordered for every patient"	psychologically based therapies including biofeedback and stress management	PT, ergonomics, and vocational rehab; job simulation and work conditioning	education for coping techniques		4 weeks, 6 days per week, 10 hours per day; generally half inpatient, half outpatient	varied, through other providers
Cedraschi 2004 ¹⁶	education discussions included a rheumatologist, clinical exam by physician	relaxation exercises, education-discussions led by psychologist addressing personal relationships	swimming pool sessions and low-impact land-based exercises led by a PT; OT led sessions on ADLs	education-discussions on scientific knowledge about FM, associated conditions, symptoms, modulating factors, and personal relationships		12 sessions, 2 times per week for 6 weeks	wait list for treatment
Chapman 1990 ¹¹⁰	withdrawal from narcotics, barbiturates, and tranquilizers; series of 6-10 lumbar sympathetic nerve blocks	group therapy, group relaxation training, individual psychological assessment and therapy if indicated	PT exercises	teach improved self-management of pain and related symptoms	pts with pending disability claims received vocational evaluation and counseling	inpatient and outpatient treatment included approx same number of treatments, but inpatients completed in 2-3 weeks, outpatient in 6-	

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
						10 weeks; determination of in- vs. outpatient based on financial coverage, need for drug withdrawal in a supervised setting, and assessment from initial med exam that pt would need "careful monitoring of behavior during treatment"	
Chapman 1994 ¹¹¹	withdrawal from narcotics, barbiturates, sedatives, and tranquilizers; series of 6-10 lumbar sympathetic nerve blocks	group therapy, group relaxation training, individual behavioural therapy to discuss problems of coping and set specific goals for activity increase	individual PT sessions to teach improved body mechanics and increase strength and ROM, with prescription of home exercises; OT to teach adaptive activity patterns	group education with pts and families regarding nature and management of chronic pain and related problems	vocational evaluation and counseling when appropriate	inpatient (27%) and outpatient (73%) treatment included approx same number of treatments, but inpatients completed in 2-3 weeks, outpatient in 6-10 weeks; determination of in- vs. outpatient based on need for drug withdrawal in a supervised setting, or if no one would be available to monitor pt at home after nerve blocks	

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Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
Chapman 1996 ¹¹²	<p>Center A: withdrawal or reduction from narcotics, barbiturates, and tranquilizers; series of lumbar sympathetic nerve blocks or trigger point injections if pt was assessed as having sympathetically maintained pain or pain related to the presence of trigger points; pts saw physician each time he/she visited the clinic</p> <p>Center B: Medical assessment; reduction/elimination of opioids, tranquilizers, barbiturates; epidural steroid and trigger point injections or sympathetic nerve blocks offered as medically indicated</p>	<p>Center A: group therapy to discuss pain and stress management issues and to reinforce functional improvement; group and individual relaxation training</p> <p>Center B: Group and individual therapy, biofeedback when indicated, group sessions with families to address family issues related to chronic pain and its management</p>	<p>Center A: group and individual PT sessions to teach improved body mechanics and increase strength and ROM, with prescription of home exercises</p> <p>Center B: daily group aerobics and individual exercises to increase physical function and stamina</p>	<p>Center A: Psychologist and Physician alternated presenting educational lectures about different aspects of pain and its management</p> <p>Center B: Psychologist-led educational groups</p>		<p>Center A: 6-10 visits of 4-5 hours each</p> <p>Center B: 3 days/week for 5 weeks</p>	
Chapman 2000 ⁵⁰	Center A: withdrawal or reduction from	Center A: group therapy to discuss pain and stress	Center A: group and individual PT	Center A: Psychologist and Physician alternated		Center A: 6-10 visits of 4-5 hours each	

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
	<p>narcotics, barbiturates, and tranquilizers; series of lumbar sympathetic nerve blocks or trigger point injections if pt was assessed as having sympathetically maintained pain or pain related to the presence of trigger points; pts saw physician each time he/she visited the clinic</p> <p>Center B: Medical assessment; reduction/elimination of opioids, tranquilizers, barbiturates; epidural steroid and trigger point injections or sympathetic nerve blocks offered as medically indicated</p> <p>Center C: Led by physicians trained in</p>	<p>management issues and to reinforce functional improvement; group and individual relaxation training</p> <p>Center B: Group and individual therapy, biofeedback when indicated, group sessions with families to address family issues related to chronic pain and its management</p> <p>Center C: daily 90-minute psychology group session plus 90-minutes weekly of individual therapy including relaxation methods and biofeedback</p>	<p>sessions to teach improved body mechanics and increase strength and ROM, with prescription of home exercises</p> <p>Center B: daily group aerobics and individual exercises to increase physical function and stamina</p> <p>Center C: weekly 60-minute swimming, 30 minutes aerobics 4 times a week, 2-hour community outing incorporating walking, 9.5 hours each week of supervised stretching and strengthening and use of treadmill</p>	<p>presenting educational lectures about different aspects of pain and its management</p> <p>Center B: Psychologist-led educational groups</p> <p>Center C: Physician-led education as noted under medical; also group education with weekly 1-hr sessions on pacing, medication and compliance, and body mechanics and posture</p>		<p>Center B: 3 days/week for 5 weeks</p> <p>Center C: inpatient, generally for 3 weeks (but home on the weekend), 7 hours of treatment per day</p>	

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
	Anesthesiology, Physiatry, and or psychiatry; physicians saw pts for 1.5 hours each week for education centering around the nature of chronic pain and the medical rationale for rehab approaches						
Ciechanowski 2003 ¹¹³	initial clinical exam; opioid and sedative-hypnotic tapering as needed	individual cognitive-behavioral psychotherapy; group coping skills training	quota-based physical and occupational therapy	group pain education		3 weeks, 5.5 days per week (some pts--20% of this cohort--stay longer if they "require additional time to reach maximum gains and have funding for additional time; most of these complete 4 weeks rather than 3)	
Connally 1991 ¹¹⁴	pain med withdrawal and medication management; 6-8 lumbar blocks	individual and group psychotherapy, vocational evaluation and counseling	activity reinforcement and stabilization	"patient education"		average of 13 treatment days (range 10 to 16) occurring over 3 to 10 weeks; 5 inpatient, 12 outpatient	
Cott 1990 ¹¹⁵	initial medical assessment	initial behavioral assessment,	prescriptions for exercise	education on difference between	some patients also had access to Field	not reported	

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
		behavioral psychologist integrated all therapeutics		"hurt" and "harm"; medical vs. non-medical components of illness behavior	Consultants--visited home and workplace, integrated with physical assessments, observation of home environment, etc.		
Crisostomo 2008 ¹¹⁶	Discontinuation or reduction in benzodiazepines and analgesics initiated and coordinated by a physician after admission (unless meds were being used to treat comorbid medical or psych illnesses)	cognitive-behavioral model served as basis for treatment, including biofeedback, relaxation training, stress management, and elimination of pain behaviors	daily PT and OT	Chemical health education, daily cognitive-behavioral group educational sessions		3 weeks, 8 hrs per day, 5 days per week	
Currie 2003 ¹⁵	group co-led by a family physician experienced in chronic pain and addiction medicine; education modules included effects of pain medications, nutrition, etc	basic approach was cognitive-behavioral; included relaxation training, sleep enhancement, substance abuse education	group co-led by an OT experienced in chronic pain and addiction medicine; included pacing skills, stretching and body mechanics	included with other components	groups of 5-9 pts	10-weeks, weekly meetings	
Davis 1992 ¹¹⁷	comprehensive assessment by physician (plus PT and	relaxation training, group and individual therapy	daily aerobic training and ROM exercises,	"educational classes" and family education		not described	

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
	psychologist) to determine suitability		resistance training every-other day				
Deardorff 1991 ⁷³	medication management (goal is reduction and elimination of narcotics and other addictive medications); medical consultation and managed performed under direction of clinic Medical Director	individual pain management, group pain management and education, biofeedback, family counseling and relaxation training	PT emphasizing stretching, strengthening, and conditioning based on behavioral quota system; OT emphasizing body mechanics training, increased sitting and standing, strengthening, work-simulation, and retraining in ADLs	included with behavioral		mean inpatient days is 20.32, mean subsequent outpatient days is 13.2; of 17 pts receiving only outpatient, mean treatment days was 28.3	no treatment
Demoulin 2010 ¹¹⁸	team included a physical medicine and rehabilitation specialist; theoretic information on spinal functional anatomy and pathophysiology	team included a psychologist who educated on emotions associated with pain, coping strategies, and impact of chronic pain on quality of life	25 sessions of physical reconditioning including group sessions and individually tailored exercises; cycle ergometer, muscle toning, stretching, strengthening trunk muscles; weekly	Back school; components described in med, behav, and phys	offered in groups of up to 8 pts	36 two-hour sessions at pace of 2 to 3 sessions per week	4-week waiting list

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
			individual rehab sessions; team included several PTs and an OT who taught minimization of work-related risks and ergonomics				
Dersh 2008 ¹¹⁹	medically directed treatment program	individual counseling and group therapeutics	quantitatively directed exercise progression supervised by PT and OT	education focused on disability management, vocational reintegration, stress management, improvement in coping skills, future fitness maintenance	detoxification from all opioid medications early in treatment	not described	
Doleys 1986 ¹²⁰	narcotics users gradually withdrawn from narcotics during first two weeks; all pts underwent 3-day inpatient evaluation prior to acceptance	group and individual therapy, relaxation/biofeed back	PT, OT	family education	detox from narcotics	4 weeks	
Dunstan 2007 ¹²¹	education on neurophysiological mechanisms of pain perception; referring GPs served as medical case managers	groups coordinated by clinical psychologist; stress management training, cognitive techniques, social skills training (anger	daily walking plus exercises and stretches increasing according to time and/or quota-based schedule; use of graded everyday tasks	education on biopsychosocial model of pain disability, acute vs. chronic pain, links between thoughts, feelings, behaviour, and pain; physiological and psychological	groups; considered "a light multidisciplinary WRAP" (Work Related Activity Program)	6 weeks; one half-day per week	

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
		management, appropriate assertiveness, communication, conflict resolution, etc.)	to build functional tolerances; pacing	benefits of exercise; safe postures and body mechanics			
Dysvik 2004 ¹²²	pre-treatment clinical exam, treatment team included a physician and two nurses, education included understanding causes of pain, what makes pain worse	psychologist on treatment team, education included relaxation, coping strategies, self-esteem, thoughts/feelings/behavior, communication skills	treatment team included physical therapist and ergotherapist; treatment included physiotherapy	see other components for education topics		8 weeks, 1 meeting per week, 3 hrs each session; plus two follow-up sessions at 6-mos and 12-mos post-treatment	
Dysvik 2005 ¹²³	pre-treatment clinical exam, treatment team included a physician and two nurses, education included understanding causes of pain, what makes pain worse	psychologist on treatment team, education included relaxation, coping strategies, self-esteem, thoughts/feelings/behavior, communication skills	treatment team included physical therapist and ergotherapist; treatment included physiotherapy	see other components for education topics		8 weeks, 1 meeting per week, 3 hrs each session; plus two follow-up sessions at 6-mos and 12-mos post-treatment	
Edwards 2003 ¹²⁴	medication management by a physician	cognitive-behaviorally oriented group therapy sessions	daily PT and graded exercise training	didactic sessions on the psychological and behavioral aspects of chronic pain	treated in groups of 4-8 pts	4 weeks	
Elkayam 1996 ¹²⁵	examination by pain specialist for possible epidural injects; neurologic exam	behavioral pain management training, cognitive behavioral skill training including	Alexander technique training, back school	Back school	chiropractic spinal manipulation, acupuncture	4 weeks	

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
		stress management, individual and group counseling emphasize a crisis intervention mode, family counseling; Alexander technique training					
Elkayam 1996 ¹²⁶	examination by pain specialist for possible epidural injects; neurologic exam	behavioral pain management training, cognitive behavioral skill training including stress management, individual and group counseling emphasize a crisis intervention mode, family counseling; Alexander technique training	Alexander technique training, back school	Back school	chiropractic spinal manipulation, acupuncture	4 weeks	
Ersek 2008 ¹²⁷	groups facilitated by 1 of 2 nurses and 1 psychologist; content included education on pain medication, mechanisms of pain, signs/symptoms that require medical attention	content included challenging negative thoughts, relaxation and breathing techniques, problem solving	strength and balance exercises, activity pacing and rationale for avoiding guarding and inactivity, heat/cold packs	entire program was educational group therapy		7 weekly sessions; 90 minutes each	book about chronic pain: either The Chronic Pain Workbook or Managing Your Pain Before It Manages You (book given out switched partway through the study to ensure participants "received current information about pain management")
Evans 2001 ¹²⁸	medically directed	individual counseling and	quantitatively directed	education focused on disability		not described	

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
	treatment program	group therapeutics	exercise progression supervised by PT and OT	management, vocational reintegration, stress management, improvement in coping skills, future fitness maintenance			
Feuerstein 1993 ¹²⁹	Initial evaluation including medical exam by physician board certified in physical and occupational medicine	work-related pain and stress management including training in relaxation skills, training in enhancing cognitive coping skills, training in self-hypnosis; assertiveness training, training in problem solving techniques	physical conditioning and work conditioning/simulation	included with behavioral	vocational counseling and placement services	daily over a 4-6 week period; average 25.4 half-days, 3.1 full days	usual care: managed by primary care physician; generally included PT, therapeutic exercise, hand therapy, chiropractic treatment, rehab counseling, and/or pain treatment
Fishbain 2005 ¹³⁰	treatment directed by neurosurgery, physiatry also part of treatment	biofeedback, psychiatry, psychology	Physical Therapy, occupational therapy, massage therapy; "usually approximately 6 hours per day" of exercise	educational groups		30 days, usually half inpatient, half outpatient	
Flavell 1996 ¹³¹	team included specialist in rehab medicine; education sessions on medical issues	team included psychologist and social worker; relaxation sessions	physical sessions of exercise, hydrotherapy; team included physiotherapist, physical educator,	team included physical educator; education sessions held on medical issues, fitness, leisure, return to work and pain management		six weeks, two days per week, 6 hrs per day	

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
			occupational therapist, and recreation officer				
France 1991 ¹³²	standardization of medications; trial of epidural steroid blocks and TENS	pain group therapy, instruction in EMG-assisted relaxation techniques, cognitive pain reduction strategies	structured exercise program of stretching and strengthening, hot/cold packs, ultrasound	included with behavioral		3 weeks intensive inpatient; continuation with "effective therapeutic modalities (except epidural block and group therapy)" on outpatient basis after discharge	
Fricton 1996 ¹³³	Pretreatment assessment by dentist; established physical diagnosis, placed/adjusted a complete stabilization splint if considered appropriate, monitored medications	Psychologist diagnosed psych disturbances and provided appropriate management/referral, educated subjects as to the nature of the psychosocial influences on their pain and offered a cog-behav program designed to change maladaptive behaviors such as clenching, bruxing, sleep, and dietary contributing factors	PT provided exercise program designed to improve jaw and cervical range of motion, function, posture	part of behavioral component		6 months; approx 6 x 30 minutes with dentist, once per month with PT, 4 x 1 hour with psychologist	
Gagnon	psychological	muscle-	information	contact made with	5 weeks, 20 days		

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
2009 ¹³⁴	care: "conversations" and relaxation therapy	strengthening, cardiovascular, active stretching, proprioceptive exercises	and guidance on physiopathological mechanisms of non-specific CLBP, posture, and ergonomics	workplace to make appropriate changes to prepare for return to work	total		
Garcy 1996 ¹³⁵	same as PRIDE	same as PRIDE	same as PRIDE	same as PRIDE	same as PRIDE	2-3 week "intensive phase of tertiary care program"	
Gatchel 1986 ¹³⁶	Same as Mayer 1985 spine	cognitive-behavioral treatment orientation	repeated noninvasive testing of back function to steer treatment process	same as Mayer 1985		not reported	
Gatchel 1986 ¹³⁷	Same as Mayer 1985 spine	cognitive-behavioral treatment orientation	repeated noninvasive testing of back function to steer treatment process	same as Mayer 1985		3 weeks; 55 hours per week	
Gatchel 1994 ¹³⁸	medication management; pretreatment eval with physician	behavioral stress management training, cog-behav skills training, individ and group counseling emphasizing a crisis intervention model, family counseling	3-6 weeks home exercises pre-treatment; physical reconditioning and whole-body retraining	cog-behav skills training		3 weeks, 57 hrs per week	
Gatchel 1999 ¹³⁹	medically directed treatment program	individual counseling and group therapeutics	quantitatively directed exercise progression	education focused on disability management, vocational		3 weeks	

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
			supervised by PT and OT	reintegration, stress management, improvement in coping skills, future fitness maintenance			
Gatchel 2002 ¹⁴⁰	pretreatment eval with physician; medical and medication management	group counseling, individual psych management (multimodal cognitive-behavioral methods of pain management)--10-16 sessions	6-12 PT sessions involving general reconditioning and ROM and strengthening exercises	10 sessions group counseling involving education about pain issues such as coping, pacing, stress, group social support		varies	
Gatchel 2005 ¹⁴¹	Same as Mayer 1985 spine	individual counseling, group therapeutics, stress management, vocational reintegration, future fitness management	quantitatively directed PT/OT exercise program	same as Mayer 1985		5-7 weeks	
Gatchel 2009 ⁹⁰	not described; referred to Mayer/Gatchel book (1988)						Standard treatment in the anesthesia pain clinic at WHMC; includes pain med management, antidepressants, nerve blocks, steroid injections, basic exercise as appropriate
Gatchel 2010 ¹⁴²	medically directed program; medical assessments; medication management/co	cog-behav therapy, individual counseling, group therapeutics, biofeedback	quantitatively directed PT/OT exercise program; future exercise maintenance	education focused on disability management, vocational reintegration, stress management, improvement in	post-intervention: long-term care plan for maintenance of skills learned in program, controlling opioid dependence, prevention of	not reported	

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
	controlling opioid dependence			coping skills	recurrent disability by expedited management of pain flare-ups		
Glenn 2003 ¹⁴³	medication management by a physician	individual and group CBT, approx 2 hours per week geared toward decreasing maladaptive thoughts and appraisals of pain and disability, teaching adaptive coping skills	PT and OT approximately 5 hours per day	"education about pain"		4 weeks, 5 days/week	
Gross 2005 ¹⁴⁴	program team includes medicine	treatment includes psychologic interventions, disciplines on treatment team includes psychology	exercise-- general and specific to injured body part, work simulation activities, PT, exercise therapy, and OT on the treatment team	treatment includes education		4-7 weeks	
Guck 1988 ¹⁴⁵	medication withdrawal; further description in Guck 1985	treatment of psychological issues; description in Guck 1985	graduated increase in physical activity and exercise; description in Guck 1985	description in Guck 1985		4 weeks	
Guck 1999 ⁸⁰	pain medications gradually tapered and eliminated	psychosocial issues related to or caused by pain were addressed	progressively increasing program of daily exercise	pts taught a variety of pain coping and relaxation skills		4 weeks, 5 days per week, all day	
Gunreben-Stempfle	education on headache	group-based stress	group exercise sessions	described in other components	groups of 6-8 pts; assigned to practice	2 times per week for 6 hours	two different groups from a prior study: a

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
2009 ²⁸	pathophysiology, evidence-based treatment, evaluation, and discussion of triggers once per week for one hour; assessment by a neurologist every 2 weeks to optimize pharmacological therapy	management training using a cognitive-behavioral approach once a week for 2 hours; progressive muscle relaxation training twice a week for one hour; weekly supervised biofeedback therapy, psychological one-on-one interview every 2 weeks	supervised by an exercise therapist twice a week for 2 hours including aerobic exercise, stretching, and light weight training		relaxation exercises at home every day; after completion of program, opportunity to attend up to 3 sessions in the first year to facilitate transfer to everyday life	each time for a total of 16 treatment days	low-intensity pain program of 20 hours duration including education on headache treatments (drug and non-drug) and training in progressive muscle relaxation techniques; the other comparison group was primary care management--non-standardized therapy by primary care physicians. This study took place between 1998 and 2000; the current study was 2004 to 2005
Gustafsson 2002 ¹³	initial exam by physician; education on pain, medication, sleep; team included rheumatologist and a registered nurse; physician provided medical consultation during course of treatment	treatment team included social workers; education included stress, coping strategies	treatment team included physiotherapists; relaxation training and fitness training in a warm water pool; BAT: movements during mental awareness used to normalize postural control, coordination, breathing and muscular tension;	see other components for details		3 full days per week for 3 weeks followed by a return to work with 1 full day of treatment every other week for 5 more occasions	waiting list: pts continued whatever treatment they were already doing

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
			individual programs for walking and stretching				
Hatten 2006 ¹⁴⁶	initial evaluation by physician, treatment plan, meds management	"psychological management"	physical therapy sessions	"group education"	note: program not well-described in this article, which focuses on cost-utility analysis	median MPP completion = 5 months, 23 days	not well-described; non-MPP pts received a treatment plan recommendation, but no info on what that included or whether it was pursued
Hazard 1989 ¹⁴⁷	modeled after PRIDE; initial clinical evaluation	stress management program monitored by biofeedback, behavioral skills training in assertiveness, rational emotive therapy, pain-related crisis mgmt; daily group therapy, alternate-day individual therapy, weekly family meetings	2 daily sessions of "floor exercises" including stretching and dynamic strengthening; progressive weight training and general endurance and coordination training; OT including work hardening	daily didactic programs covering spinal anatomy, medications, compensation law, surgery, and the theoretical foundations of the treatment		3 weeks, 53 hrs per week	no treatment through NEBC for "denied" group; crossover group included 6 pts initially denied coverage who were treated 6 mos later
Hazard 1991 ¹⁴⁸	modeled after PRIDE; initial clinical evaluation	stress management program monitored by biofeedback, behavioral skills training in assertiveness, rational emotive therapy, pain-related crisis mgmt; daily group	2 daily sessions of "floor exercises" including stretching and dynamic strengthening; progressive weight training and general endurance and	daily didactic programs covering spinal anatomy, medications, compensation law, surgery, and the theoretical foundations of the treatment		3 weeks, 53 hrs per week	

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
		therapy, alternate-day individual therapy, weekly family meetings	coordination training; OT including work hardening				
Hazard 2009 ¹⁴⁹	modeled after PRIDE; initial clinical evaluation by medical physician or nurse practitioner	stress management program monitored by biofeedback, behavioral skills training in assertiveness, rational emotive therapy, pain-related crisis mgmt; daily group therapy, alternate-day individual therapy, weekly family meetings	2 daily sessions of "floor exercises" including stretching and dynamic strengthening; progressive weight training and general endurance and coordination training; OT including work hardening	daily didactic programs covering spinal anatomy, medications, compensation law, surgery, and the theoretical foundations of the treatment		3 weeks, 8 hrs per day	
Hildebrandt 1997 ¹⁵⁰	physical assessment by a physician	cognitive-behavioral group therapy, relaxation training; goal to change maladaptive behavior, alter maladaptive cognitions, improve coping skills, counteract depression, etc.	pre-program period of stretching and callisthenic exercises; intensive treatment period included aerobic, functional strength and endurance exercises	back school, pre-program education	3-week pre-program period of education and light activity, 4 hours per day, 3 days per week	intensive, multidisciplinary treatment of 5 weeks, 7 hours per day	
Hooten 2007 ¹⁹	Discontinuation or reduction in benzodiazepines, muscle relaxants, and	cognitive-behavioral model served as basis for treatment, including	daily PT with increased intensity over course of program; daily	Chemical health education, daily cognitive-behavioral group educational sessions		3 weeks, 8 hrs per day, 5 days per week	

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
	analgesics (including opioids) initiated and coordinated by a physician after admission (unless meds were being used to treat comorbid medical or psych illnesses); pre-admission physician exam	biofeedback, relaxation training, stress management, and elimination of pain behaviors	OT addressing impairments of ADLs				
Hooten 2009 ¹⁵¹	Discontinuation or reduction in benzodiazepines, muscle relaxants, and analgesics (including opioids) initiated and coordinated by a physician after admission (unless meds were being used to treat comorbid medical or psych illnesses); pre-admission physician exam	cognitive-behavioral model served as basis for treatment, including biofeedback, relaxation training, stress management, and elimination of pain behaviors	daily physical reconditioning	Chemical health education, daily cognitive-behavioral group educational sessions		3 weeks, 8 hrs per day, 5 days per week	
Hooten 2009 ¹⁵²	Discontinuation or reduction in benzodiazepines, muscle relaxants, and analgesics (including	cognitive-behavioral model served as basis for treatment, including biofeedback, relaxation	daily PT with increased intensity over course of program; daily OT addressing impairments of	Chemical health education, daily cognitive-behavioral group educational sessions		3 weeks	

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
	opioids) initiated and coordinated by a physician after admission (unless meds were being used to treat comorbid medical or psych illnesses); pre-admission physician exam	training, stress management, and elimination of pain behaviors	ADLs				
Howard 2009 ¹⁵³	medically supervised	disability management such as counseling stress management, biofeedback, coping skills	quantitatively-directed exercise progression under supervision of PT/OT	education support and assistance provided for injury prevention and occupational factors		not reported	
Huge 2006 ¹⁵⁴	assessment by an evaluation group including physicians (anesthesiologists, physical medicine and rehab); education provided on anatomy and biomechanic principles of the spine, pain physiology, and pharmacology of analgesics and other meds used in pain treatment	cognitive-behavioral group therapy; progressive muscle relaxation training, education on psychological factors of pain perception	training program for improvement of force, endurance, and coordination, including swimming, aerobics, sauna, functional strength and endurance exercise; posture and ergonomic movements taught and trained with simulated	see medical and behavioral component descriptions	offered in groups of 6-8 pts	4 weeks, 5 days per week, 8 hours per day	60-90 minute assessments by a physician and a psychologist; therapeutic plan created, including physical therapy, psychological intervention, and relaxation; implementation of the proposed therapy was left "to the discretion of the patient and his primary care physician"

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
			workstations (work hardening)				
Jensen 1995 ¹⁵⁵	staff included physicians and nurses; education included anatomy, medications, etc.; medication cessation where appropriate	group cognitive-behavioral intervention led by a psychologist, including teaching and practicing pain and stress coping skills; taught about pain behavior and the role of secondary gains	PTs led group progressive relaxation class; physical exercise, TENS, hot/cold packs, mobilization, etc.	series of lectures on topics described in other components		5 weeks	same as MPP, except no behavioral component
Jensen 1994 ¹⁵⁶	team included physician and nurse; education included anatomy, use/effect of medications, pain behavior and its consequences, etc.	cognitive-behavioral module of 8 sessions on problem solving, goal setting, acquisition of skills, and relaxation are taught and practiced; contract developed with goals of behavioral changes to enhance health-promoting behavior; treatment team included a psychologist	designed to enhance endurance more than strength; progressive training plus physical activity (walking, swimming, bowling, etc.); led by PTs; some pts were offered passive exercises, ultrasound, heat, massage, etc.	12 lectures given by all members of the treatment team; see other components	One day training program for pts' supervisors	8 hrs per day, 4 weeks	sicklisted workers living in the area; no treatment
Jensen 1998 ¹⁵⁷	team included physician and nurse; education	cognitive-behavioral module of 8	designed to enhance endurance	12 lectures given by all members of the treatment team; see	One day training program for pts' supervisors	8 hrs per day, 4 weeks	sicklisted workers living in the area; no treatment

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
	included anatomy, use/effect of medications, pain behavior and its consequences, etc.	sessions on problem solving, goal setting, acquisition of skills, and relaxation are taught and practiced; contract developed with goals of behavioral changes to enhance health-promoting behavior; treatment team included a psychologist	more than strength; progressive training plus physical activity (walking, swimming, bowling, etc.); led by PTs; some pts were offered passive exercises, ultrasound, heat, massage, etc.	other components			
Jensen 1992 ¹⁵⁸	same as Jensen 1994	same as Jensen 1994	same as Jensen 1994	same as Jensen 1994	same as Jensen 1994	same as Jensen 1994	
Jensen 1994 ¹⁵⁹	initial clinical exam; opioid and sedative-hypnotic tapering as needed	individual and family psychotherapy; group coping skills training	PT and OT	group pain education		3 weeks	
Jensen 2001 ¹⁶⁰	initial clinical exam; opioid and sedative-hypnotic tapering as needed	individual cognitive-behavioral psychotherapy; group coping skills training	quota-based physical and occupational therapy	group pain education		3 weeks, 5.5 days per week (some pts--20% of this cohort--stay longer if they "require additional time to reach maximum gains and have funding for additional time; most of these	

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
Jensen 2003 ¹⁴	<p>UW: clinical assessment, medication management (focus on decreasing and eliminating use of sedatives and opioids)</p> <p>FM: tapering of opioid and sedative-hypnotics when appropriate, initial clinical assessment by rheumatologist</p>	<p>UW: individual cognitive-behavioral psychotherapy; group coping skills training</p> <p>FM: cognitive-behavioral therapy</p>	<p>UW: PT and OT focused on increasing strength, flexibility, endurance, and sitting/standing time and assisting the pt to return to customary work, household, and avocational activities</p> <p>FM: Physiotherapy, occupational therapy</p>	<p>UW: group pain education</p> <p>FM: "education"</p>		<p>complete 4 weeks rather than 3)</p> <p>UW: 3-weeks, 5.5 days per week</p> <p>FM: 4 weeks, 5 days per week</p>	
Jensen 2004 ¹⁷	<p>UW: clinical assessment, medication management (focus on decreasing and eliminating use of sedatives and opioids)</p> <p>FM: tapering of opioid and sedative-hypnotics when appropriate, initial clinical</p>	<p>UW: individual cognitive-behavioral psychotherapy; group coping skills training</p> <p>FM: cognitive-behavioral therapy</p>	<p>UW: PT and OT focused on increasing strength, flexibility, endurance, and sitting/standing time and assisting the pt to return to customary work, household, and avocational activities</p>	<p>UW: group pain education</p> <p>FM: "education"</p>	<p>UW: Pt. family members asked to participate during last two days</p> <p>FM: weekly one-hour educational sessions for family members</p>	<p>UW: 3-weeks, 5.5 days per week</p> <p>FM: 4 weeks, 5 days per week</p>	

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
	assessment		FM: Physiotherapy, occupational therapy				
Jensen 2007 ¹⁶¹	initial clinical exam; opioid and sedative-hypnotic tapering as needed	individual cognitive-behavioral psychotherapy; group coping skills training	quota-based physical and occupational therapy	group pain education	Pt. family members asked to participate during last two days	3 weeks, 5.5 days per week	
Jousset 2004 ¹⁶²	initial assessment with physiatrist, occupational medicine specialist; weekly meetings with physiatrist (medical supervisor of the program)	initial appointment with psychologist, further appointments scheduled "if required"	daily group physical activity including: stretching, proprioception, strengthening exercises, aerobic activities, endurance training, balneotherapy; daily occupational therapy including training in flexibility, endurance and coordination, weight lifting, and work simulation	ergonomics		5 weeks, 5 days per week, 6 hours per day	Active individual physical therapy sessions: 1 hr treatment sessions, 3 times per week, for 5 weeks; program of exercise to be performed at home on two additional days per week
Kaapa 2006 ¹⁶³	rehab team included rehabilitation medicine physician; back	cog-behav stress management methods and applied relaxation (10 hours total)	PT and occupational PT taught total of 11 hours of back school;	back school including anatomy, functions of muscles and spine, active treatment methods	home-exercise period	8 weeks comprising 70 hours of treatment: intensive period	individual PT: 10 one-hour treatment sessions over 6 to 8 weeks; each session included 30- to 40-

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
	school included 4 hours instruction from physician; "if necessary" medications were prescribed or changed; individual physiatrist appointment to explain imaging findings and clarify causes of back pain (and review meds)		instruction in work ergonomics, including review of videotape of patients in workplace; physical exercise program planned individually based on PT exam and baseline fitness, endurance, and mobility; program carried out in groups including general fitness, muscle strengthening, spine and hip mobility, functional exercises, and progressive relaxation			of 5 days/6 hrs per day; home-training of 2 weeks, and semi-intensive period of 5 weeks/two days per week/2 hours per session	minutes of passive pain treatment (massage, traction, manual mobilization of spine, TNS) and 15- to 20-minutes of light active exercise (muscle stretching, spine mobilization, deep trunk muscle exercises); light home-exercise program; encouraged to do general physical training (swimming, walking)
Kenny 2004 ¹⁶⁴	supervised reduction/withdrawal of pain medications; medical consultations	cognitive-behavioral program; psychological consultations	exercise, group activities, community-based tasks; functional restoration program	education sessions	study tested addition of group singing lessons to the normal ADAPT program	3 weeks, 5 days per week, 8 hrs per day	

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
Keogh 2005 ¹⁶⁵	treatment team includes nurse, physicians	treatment based on Acceptance and Commitment Therapy; included relaxation exercises, exposure to thoughts and feelings related to the experience of pain, etc.; daily psychology and relaxation sessions; no direct cognitive restructuring exercises	graded exposure and activation of the whole body in group sessions twice daily	health habits and choosing meaningful directions in life; also included with behavioral	group delivered	3 or 4 weeks residential or 3 weeks in-hospital; 5 days per week, 6 hours per day	
Kidner 2009 ¹⁶⁶	medically supervised	disability management such as counseling stress management, biofeedback, coping skills	quantitatively-directed exercise progression under supervision of PT/OT	education support and assistance provided for injury prevention and occupational factors		not specified	
Kleinke 1988 ¹⁶⁷	medicine and nursing disciplines	relaxation, social work, group therapy	TENS, PT, massage, heat, ice	lectures		28 days	
Kohles 1990 ¹⁶⁸	medically supervised	disability management such as counseling stress management, biofeedback, coping skills	quantitatively-directed exercise progression under supervision of PT/OT	education support and assistance provided for injury prevention and occupational factors	later group received "more aggressive rehabilitation and reconditioning philosophy" and an expanded pre-treatment education phase	3 weeks + pretreatment phase of 2-6 weeks for later group	
Kole-Snijders 1999 ¹⁶⁹	initial screening exam by physician; medication management	treatment contract created based on baseline activities and pain behaviors for increasing	50 hrs of individual physical therapy, 38 hours of group	as part of the Operant Behavioral treatment model, pts are taught the difference between	In conditions other than Operant Behavioral Treatment as usual: weekly spouse group	2 weeks pre-treatment recording of baseline activities; 5	Wait-list period of no treatment (after wait-list period, these patients were provided the Operant Behavior

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
		<p>activity and decreasing pain behavior; weekly sessions with psychologist;</p> <p>In addition, there were three different cognitive portions:</p> <ol style="list-style-type: none"> 1. cognitive coping skills training program with a behavior therapist delivered in groups 2. an attention control to compare with the first condition: group discussion program led by the same behavior therapist using a book about pain written for pain patients plus group listening to music; EMG biofeedback was demonstrated once in this condition 3. no additional cognitive portion; this condition was less standardized and did not include the contract or the spouse training (see "other MPP 	<p>PT; 12 hrs of individual OT, 26 hrs of group OT</p>	<p>health behavior and pain behavior</p>	<p>training using operant behavioral treatment; treatment delivered in groups</p>	<p>weeks inpatient treatment, 3 weeks outpatient treatment 3 days per week</p>	<p>Treatment as usual)</p>

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
		components")--this was considered Operant Behavioral treatment as usual and was provided individually, rather than in groups					
Koopman 2004 ¹⁷⁰	team included occupational physician	team included psychologist; group and individual counseling using cognitive therapy; one individual counseling session per week; relaxation training twice a week	team include physical therapist and physical education instructor; physical reconditioning on the Graded Activity principle following an operant conditioning approach plus graded exposure following a classical conditioning approach; physical fitness training, functional training, recreation, hydrotraining, stretching	training in relaxation for pain control, etc.	partner/significant other program of three meetings; most content delivered in groups of 6-10 pts	12 weeks, 3 sessions per week, 6 hrs per day	
Lang 2003 ¹⁷¹	providers included a physician , who provided education	1 hour per session of cognitive-behavioral therapy; included	1.5 hours per session of "restorative exercise therapy"	0.5 hours per session of education on anatomy, physiology, and movement-related	program organized "by cooperation of local health-care providers in the community with	20 days at the rate of 3 days per week, 4 hours per day	usual care provided by 35 community physicians and physiotherapists

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
	components	group and individual counseling; 0.5 hours of progressive muscle relaxation training provided by psychologist	conducted and supervised by one of the sport teachers , 0.5 hours of individual physiotherapy	basics of the back and evidence-based knowledge about the effectiveness of back-related therapies	different specialties who were experienced in the management of back pain"; cost was 600 DM (this was in 1997-98) and was paid for by the patient		
Law 2009 ¹⁷²	drug reduction	relaxation, sleep management, family involvement	exercise and stretch, pacing, at least 3 hours daily of physical rehab	education on behavioral modifications and other issues	stretching of one hamstring, but not the other	3 weeks	
Lipchik 1993 ⁴⁸	medications and detoxification from addictive medications	biofeedback training, assertiveness training, individual, family, and group psychotherapy, behavior modification, psychoeducational group therapy, stress management training	physical exercise program, OT	psychoeducational group therapy		3-4 weeks	variety of outpatient treatments, but no psychotherapy (most frequent was 41% prescribed antidepressants, 35% received nerve blocks or trigger point injections, 17% referred for PT, 19% referred for biofeedback)
Luoto 1996 ¹⁷³	baseline medical exam by physiatrist, team carrying out program included physician	cognitive-behavioral disability management groups (relaxation, visual images, etc.)	cardiovascular endurance exercises, muscular strength and endurance exercises, stretching; no passive PT	5 hours of discussion groups per week including improving skills to cope with pain, problem solving, etc.	included group therapy (no info on group size)	3 weeks home-based exercise post-baseline exam; 3 weeks inpatient, 42+ hours per week	
Luoto 1998 ¹⁷⁴	baseline medical exam by physiatrist,	cognitive-behavioral disability	cardiovascular endurance exercises,	5 hours of discussion groups per week including	included group therapy (no info on group size)	3 weeks home-based exercise post-baseline	

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
	team carrying out program physician	management groups (relaxation, visual images, etc.)	muscular strength and endurance exercises, stretching; no passive PT	improving skills to cope with pain, problem solving, etc.		exam; 3 weeks inpatient, 42+ hours per week	
Lynch 1996 ¹⁷⁵	physician monitoring (e.g., medication management)	individual, family, group psychosocial treatment sessions (stress management, communication skills, etc.)	physical exercise programming, OT, individual and group vocational rehab counseling, recreational therapy	part of psychological component: differences between chronic and acute pain, role of psychological factors in modulating pain, benefits of pacing and other modifications in behavior	admitted as a group of 3-4	6 weeks: one week of assessments and goal setting, 5 weeks of full-day sessions	no treatment from center or didn't complete program
Maclaren 2006 ¹⁷⁶	"medical management was also included"	psychoeducation in a group format included information on pain-coping skills and other health-related information; individual training in self-management techniques (e.g., progressive muscle relaxation)	PT and OT including stretching, strength training, cardiovascular training, and work conditioning/hardening	included in behavioral		4-6 weeks, 5 days per week, 6 hours per day; 3 hrs PT/OT, 3 hrs psychoeducation each day	
Magnusson 2004 ²⁷	assessment and medical follow-up by neurologist; symptomatic medications for headache; advice available	group therapy including self-management group on pain-coping strategies; some optional groups available as well, including	instruction in posture and exercise by a kinesiologist; physiotherapy as considered appropriate by the program	lectures on pain-related topics for pts and families		average 11 mos (range 2-22 mos)	usual care: physician-based pharmacological program with neurologist, generally seen every 3-5 months; written information

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
	from nursing coordinator	sleep, relaxation, family, and "rebuilding self and relationships"	PT and physician				appropriate to situation, counseling and education from a nurse
Man 2007 ¹⁷⁷	staff includes pain nurses and a pain specialist	staff includes clinical psychologist and medical social worker, training in communication skills and coping strategies, setting goals, pacing, relaxation	graded physical exercises, functional activities training, team includes OT and PT, walking, stretching, personal exercise training	teaching sessions from all clinic staff on pain mechanisms and management		14 full days over the course of 6 weeks	
Mangels 2009 ¹⁷⁸	medical care including analgesic medication if necessary	cognitive-behavioral group on psychologic pain management guided by a manual, included handouts on biopsychosocial model of pain, pain coping strategies, etc.; progressive muscle relaxation training, weekly individual sessions with the psychotherapist	physical therapy in individual and group sessions, occupational therapy with ergonomic training, art therapy, etc.; massage, electrotherapy, hydrotherapy, thermotherapy, nutritional advice	back school, see behavioral component	some patients were also offered 7 Booster sessions conducted by telephone by clinical psychologists	4 weeks	orthopedic rehabilitation treatment on inpatient basis--similar to the treatment described for MPP, except offered in a more individualized context (less group content) and NO behavioral component except for optional training in progressive muscle relaxation
Maruta 1990 ¹⁷⁹	Medication management, complete medical evaluation at admission	cognitive/operant conditioning, group psychotherapy, biofeedback-relaxation,	physical rehabilitation measures	"education": further described in three Swanson et al. publications	pts with provisional chemical dependency diagnoses are directed to participate in daily	variable; mean for first 249 completers was 23 days	

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
		supportive psychologic treatment			chemical dependency group; key goal of treatment is to "reduce the intake of medication to a minimum"		
Masuda 2005 ⁴⁰	minimization of drugs, injection, and cataplasm	CBT targeting pain -related cognition and behavior	exercise therapy	education in pain-related beliefs and connection to chronic pain, psychosocial factors, etc.	half of patients also received thermal therapy in a far-infrared ray dry sauna system	5 weeks	
Mayer 1994 ¹⁸⁰	initial assessment by physician	group/individual counseling	6 hrs per day of aggressive physical training	4 hrs per day of group/individual counseling or educational classes	initial phase of 4-hrs per week pre-admission for education and stretching/strengthening; post-phase of average 25 further hours of supervised training (range 5 to 40 hrs)	3-week intensive phase, 10 hrs per day	
Mayer 1998 ⁷⁵	no info provided, assumed same as other post-1987 PRIDE						
Mayer 2001 ¹⁸¹	initial assessment by physician; drug detoxification as necessary	group/individual counseling on work return, coping, pain management skills, and stress management	strength and endurance training supervised by PT/OT	education focused on psychosocial and case management factors		not specified	
Mayer 2006 ¹⁸²	initial assessment by physician	group/individual counseling on work return, coping, pain management skills, and stress management	quantitatively directed strength and endurance training supervised by PT/OT	education focused on psychosocial and case management factors		not specified	

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
Mayer 1986 ¹⁸³	medically directed, clinical exam at admission	behavioral pain management training (muscle relaxation, guided imagery, EMG/temperature biofeedback); cognitive-behavioral skills training; individual and group counseling on crisis-intervention; family counseling	exercises to enhance spinal mobility, trunk strength, endurance, CV fitness, lifting capacity, positional tolerance, work simulation/hard ening	training and education as part of physical rehabilitation		3 weeks, 58 hours per week	3-week inpatient program involving medical treatment, PT, OT, psychological treatment including biofeedback and behavioral intervention; different follow-up time period (11-15 months), no physical data
Mayer 1987 ¹⁸⁴	medically directed, clinical exam at admission	behavioral pain management training; cognitive-behavioral skills training; individual and group counseling on crisis-intervention; family counseling	exercises to enhance spinal mobility, trunk strength, endurance, CV fitness, lifting capacity, positional tolerance, work simulation/hard ening	training and education as part of physical rehabilitation		3-weeks; 57 hours per week	no treatment provided by PRIDE group
Mayer 1988 ¹⁸⁵	initial assessment by physician	multimodal disability management approach using cognitive-behavioral techniques	physical training and work simulation based on quantified physical functional capacity	includes 50% education/counseling		2 or 3 weeks, 53 hours per week; 50% physical training, 50% education/counseling	
Mayer 2002 ¹⁸⁶	initial assessment by physician; drug detoxification as necessary	group/individual counseling on work return, coping, pain management skills, and stress management	strength and endurance training supervised by PT/OT	education to maintain program goals including fitness maintenance, vocational counseling, etc		not specified	

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
Mayer 2008 ¹⁸⁷	medically directed, clinical exam at admission	behavioral pain management training; cognitive-behavioral skills training; individual and group counseling on crisis-intervention; family counseling	quantitatively directed strength and endurance training supervised by PT/OT	education focused on disability management, vocational reintegration, stress management, improvement in coping skills	narcotic detoxification	4-10 weeks; dependent on other responsibilities, with daily treatment preferred; intensive phase usually attended 8 h/d	
McCracken 2005 ¹⁸⁸	treatment team includes nurse, physicians	treatment based on Acceptance and Commitment Therapy; included relaxation exercises, exposure to thoughts and feelings related to the experience of pain, etc.; daily psychology and relaxation sessions; no direct cognitive restructuring exercises	graded exposure and activation of the whole body in group sessions twice daily	health habits and choosing meaningful directions in life; also included with behavioral	group delivered	3 or 4 weeks residential or 3 weeks in-hospital; 5 days per week, 6 hours per day	
Michaelson 2004 ¹⁸⁹	preliminary medical exam by physician; treatment team included physician	treatment team included psychologist; behavioral group therapy and relaxation exercises	physical exercise aimed at improving general fitness and increasing physical capacity of specific body regions; treatment team included PTs	treatment included back school	after inpatient portion, pts given individual one-year rehab programs to perform on their own; two further meetings with treatment team at 3 mos and 12 mos	4 weeks, 5 days per week, 6 hours per day	
Middaugh 1988 ¹⁹⁰	medical management	biofeedback, pacing, cognitive	extensive daily exercise,	included with behavioral		inpatients: 3-4 weeks;	

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
	including diagnostics and withdrawal from narcotics	copng techniques, stress management techniques, communication skills	walking, stationary cycling; OT including use of proper posture and body mechanics			outpatients: 4 hours per week for 8 weeks	
Mohler 1991 ¹⁹¹	dental treatment	biofeedback with psychological counseling; substance abuse education; pain management education	PT and OT; flexibility/conditionings/strengthening exercises, body mechanics education; supervised occupational, recreational, and social activities	"psychoeducational classes designed to be appropriate for individuals with various MSK injuries"	groups of up to 10 patients--none of the other pts in the groups would have had craniomandibular disorder	4 weeks, 5 days per week, 8+ hours per day	
Moore 1986 ²⁴	initial eval by neurosurgeon to r/o immediate need for surgery or other biomed treatments; gradual withdrawal of pain meds	"treatment was based on cognitive-behavioral principals"; individual, marital, and group psychotherapy; training in cognitive pain management techniques; relaxation training	exercise in a heated pool; physical therapy, occupational therapy	training included cognitive pain management, relaxation	spouses trained in operant techniques to reinforce health behaviors and extinguish pain behaviors	average 6 weeks	
Norrefalk 2005 ¹⁹²	initial meeting with rehab medicine specialist physician or physician in specialist training for 1.5	treatment team included psychologist and social counselor; psychological pain management, group counseling,	physical, functional, and ergonomic training; treatment team included 3 PTs and 3 OTs; OT visit to	pain school, various training in ergonomics, etc. (see other components)	First 3 weeks constituted an Impairment and Disability Evaluation and Analysis (IDEA) to assess possible work ability in spite of and considering	8 weeks, 5 days per week, 7.5 hours per day	pts rejected for lack of space

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
	hours; pain school run by physician; treatment team included several physicians and a nurse; minimization of drugs during first 3 weeks of treatment	relaxation groups, family meetings	employer, if any; individual exercise programs designed for all pts to increase physical function (including cycling, walking, pool, stretching, TENS, hot packs, etc.)		the pts' remaining pain situation		
Norrefalk 2006 ¹⁹³	initial meeting with rehab medicine specialist physician or physician in specialist training for 1.5 hours; pain school run by physician; treatment team included several physicians and a nurse; minimization of drugs during first 3 weeks of treatment	treatment team included psychologist and social counselor; psychological pain management, group counseling, relaxation groups, family meetings	physical, functional, and ergonomic training; treatment team included 3 PTs and 3 OTs; OT visit to employer, if any; individual exercise programs designed for all pts to increase physical function (including cycling, walking, pool, stretching, TENS, hot packs, etc.)	pain school, various training in ergonomics, etc. (see other components)	First 3 weeks constituted an Impairment and Disability Evaluation and Analysis (IDEA) to assess possible work ability in spite of and considering the pts' remaining pain situation	8 weeks, 5 days per week, 7.5 hours per day	
Norrefalk 2007 ¹⁹⁴	Same as Norrefalk 2005	Same as Norrefalk 2005	Same as Norrefalk 2005	Same as Norrefalk 2005	Same as Norrefalk 2005	8 weeks, 7.5 hrs per day, 5 days per week	N/A

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
Norrefalk 2008 ¹⁹⁵	initial meeting with rehab medicine specialist physician or physician in specialist training for 1.5 hours; pain school run by physician; treatment team included several physicians and a nurse; minimization of drugs during first 3 weeks of treatment	treatment team included psychologist and social counselor; psychological pain management, group counseling, relaxation groups, family meetings	physical, functional, and ergonomic training; treatment team included 3 PTs and 3 OTs; OT visit to employer, if any; individual exercise programs designed for all pts to increase physical function (including cycling, walking, pool, stretching, TENS, hot packs, etc.)	pain school, various training in ergonomics, etc. (see other components)	First 3 weeks constituted an Impairment and Disability Evaluation and Analysis (IDEA) to assess possible work ability in spite of and considering the pts' remaining pain situation	8 weeks, 5 days per week, 7.5 hours per day	treatment as usual
Olason 2004 ¹⁹⁶	treatment team includes physicians and nurses; first two weeks are dedicated to education, including physiology; pain-relieving drugs are discontinued	treatment team includes psychologist and social worker; pts are evaluated for psychosocial factors and "problems are dealt with as necessary"; body awareness training and relaxation techniques taught individually and in groups	treatment team includes OTs, PTs and sports therapists; education includes ergonomics; after first two weeks, emphasis is on physical fitness, mostly offered in groups ("most of the patients have already received	first two weeks of program are "pain school": see other components for description		7 weeks	

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
			physical therapy and do not get individual physical therapy"; some do get manipulation or other forms of "special physical therapy"				
Patrick 2004 ¹⁹⁷	inpatient program at a hospital; medications monitored to allow only aspirin and Tylenol	operant conditioning on exercise behaviors, relaxation training, biofeedback training, cognitive-behavioral coping skills, daily homework exercises	twice-daily PT and daily aerobic fitness	daily education on mechanisms of pain; vocational rehab		3 weeks inpatient	same as MPP EXCEPT behavioral component (not provided)
Perry 2010 ⁷⁷	education about pain mechanisms, medication management with program physician, education on potential signs that changes in pain level may represent a serious medical condition	training in self-management skills such as relaxation and desensitization, goal setting, cognitive restructuring, communication	pacing and upgrading of activities, exercise, stretch	included with medical and behavioral	used Manage Your Pain book; delivered in groups	10 group sessions totaling 45 hours of contact time	Usual care: included medications, individual PT and clinical psychology interventions for pain management, implantation of intrathecal pumps, etc.
Pfungsten 1997 ⁷⁴	physical assessment by a physician	cognitive-behavioral group therapy, relaxation	pre-program period of stretching and callisthenic	back school, pre-program education	3-week pre-program period of education and light activity	5 weeks, 7 hours per day	

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
		training; goal to change maladaptive behavior, alter maladaptive cognitions, improve coping skills, counteract depression, etc.	exercises; intensive treatment period included aerobic, functional strength and endurance exercises				
Polatin 1989 ¹⁹⁸	same as prior	same as prior	same as prior	same as prior		not noted	
Polatin 1997 ¹⁹⁹	medically supervised	cognitive-behavioral classes, individual and group counseling	preparatory phase of preconditioning mobility, intensive phase for strength and endurance	structured patient education		2-3 weeks intensive (10 hrs per day, every day); 2-6 weeks preparatory (meeting twice per week)	
Proctor 2004 ²⁰⁰	drug detox, medically supervised program	psychological and case management techniques	quantitatively directed exercise progression	geared toward fitness maintenance		3-week intensive plus variable length pre-treatment phase of physical preparation and education	
Proctor 2005 ²⁰¹	drug detox, medically supervised program	psychological and case management techniques	quantitatively directed exercise progression	geared toward fitness maintenance		not described	
Protas 2004 ²⁰²	drug detox, medically supervised program	psychological and case management techniques	quantitatively directed exercise progression	geared toward fitness maintenance		total of 5-8 weeks including 3 week intensive portion	
Rainville 1992 ²⁰³	? Possibly PRIDE program	psychological and behavioral support	aggressive physical conditioning directed by PT and OT for 6 h/day	education about pain-related issues	disability case management	4-10 weeks, average 7 weeks culminating in all cases with 15 consecutive	drop outs from program, pts who went through initial assessment but decided not to enroll

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
						weekdays of comprehensive therapy during which pts were at the treatment facility for 8 h each day	
Rainville 1993 ²⁰⁴	? Possibly PRIDE program	psychological and behavioral support	aggressive physical conditioning directed by PT and OT for 6 h/day	education about pain-related issues	disability case management	4-10 weeks, average 7 weeks culminating in all cases with 15 consecutive weekdays of comprehensive therapy during which pts were at the treatment facility for 8 h each day	drop outs from program, pts who went through initial assessment but decided not to enroll
Robbins 2003 ³⁸	intake clinical assessment by staff pain physician; all patient treatment plans are discussed by the entire treatment team (including physicians) at initial evaluation, midpoint, and discharge (average: 2-4 physician visit sessions for pt)	individual cognitive-behavioral sessions; pts with complicated psychological distress also referred for 1+ appointments with team psychiatrist for psychotropic meds stabilization (average: 10 individ cog-behav sessions, 1 family session, 1-2 psych meds monitoring sessions)	average 5-10 physical therapy sessions per pt	group educational sessions (average 10 per pt)		not described	same as MPP except no PT at interdisciplinary program (no info on whether pts received PT elsewhere)
Rome 2004 ²⁰⁵	Discontinuation or reduction in opioids initiated	cognitive-behavioral model served as basis	physical reconditioning, OT for job,	Chemical health education, pain management		3-week "intensive"	

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
	and coordinated by a physician after admission	for treatment, including biofeedback, relaxation training, stress management, and elimination of pain behaviors	leisure, and home activities	training			
Sanders 1993 ²⁶	pain med withdrawal and medication management; 6-8 lumbar blocks	individual and group psychotherapy, vocational evaluation and counseling	activity reinforcement and stabilization; active and passive PT	"patient education"			
Scerri 2006 ²⁰⁶	individually tailored pharmacotherapy and regular follow-up by a physician	individual and group psychosocial interventions (1.5 hrs per week)	physical therapy (7.5 hrs per week) with stretching, muscle strengthening, and aerobic endurance exercises, occupational therapy (8 hrs per week)	group classes (2.5 hrs per week)		3 weeks	
Scharff 1994 ²⁵	therapeutic instruction from a neurologist on headaches and treatments	posture correction instruction, ergonomics, muscle relaxation, autogenic training, instruction in basic principles of cognitive therapy	PT instruction in cervical anatomy, neck and should exercises, use of heat and ice	all other components were "headache education and therapeutic instruction" including pathophysiology, nutrition, etc.		five weekly 3-hour group sessions	no treatment from center
Skinner 1990 ²⁰⁷	staff included anesthetist and a GP who taught autohypnosis;	staff included two clinical psychologists; pts taught cognitive skills to deal with	staff included a PT; each session included 1 hour physical	included with other components (skills training and education on pain)	when possible, close friends or relatives were included in the lifestyle planning group sessions;	one afternoon per week for 7 consecutive weeks	

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
	education on gate control theory of pain	stress and pain; lifestyle planning group sessions to develop individual goals in areas of paid work, self care, analgesic reduction, and social life; 30 minutes of learning progressive relaxation	exercise designed to improve general fitness and confidence in performance of physical activity		delivered in groups of approx 9		
Skouen 2002 ²⁰⁸	initial clinical exam, education on anatomy and pain mechanisms	cognitive behavioral modification in group sessions	individually based graded exercise program based on physical tests (exercising 1.5 to 3.5 hours per day)	education sessions included exercise, mental coping strategies, fear avoidance, etc.		4 weeks, 5 days per week, 6 hours per day	treatment as usual, light multidisciplinary treatment (not everyone got psycho treatment, mostly PT and nurse sessions of education)
Skouen 2006 ²⁹	initial clinical exam, education on anatomy and pain mechanisms	cognitive behavioral modification in group sessions	individually based graded exercise program based on physical tests (exercising 1.5 to 3.5 hours per day)	education sessions included exercise, mental coping strategies, fear avoidance, etc.		4 weeks, 5 days per week, 6 hours per day	treatment as usual, light multidisciplinary treatment (not everyone got psycho treatment, mostly PT and nurse sessions of education)
Snow 1988 ²⁰⁹	medication management	group, individual, and family psychotherapy; stress management; hypnosis	PT and OT	stress management workshops, e.g.	vocational counseling	3 week hospital admission plus average 6 months outpatient "regularly scheduled" appointments	
Snow 1990 ²¹⁰	clinical assessment pre-	psychotherapy, psychosocial	general conditioning	included in behavioral and PT		not reported	

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
	admission	training in time management, leisure planning, and assertiveness; medication management; biofeedback training	exercises, strengthening, stretching, connective tissue massage, pool therapy, weight-reduction diet; OT program including activities of daily living training				
Spinhoven 2004 ²¹¹	initial screening exam by physician; medication management	treatment contract created based on baseline activities and pain behaviors for increasing activity and decreasing pain behavior; weekly sessions with psychologist; In addition, there were two different cognitive portions: 1. cognitive coping skills training program with a behavior therapist delivered in groups 2. an attention control to compare with the first condition: group discussion program	50 hrs of individual physical therapy, 38 hours of group PT; 12 hrs of individual OT, 26 hrs of group OT	as part of the Operant Behavioral treatment model, pts are taught the difference between health behavior and pain behavior	weekly spouse group training using operant behavioral treatment; treatment delivered in groups	2 weeks pre-treatment recording of baseline activities; 5 weeks inpatient treatment, 3 weeks outpatient treatment 3 days per week	Wait-list period of no treatment (after wait-list period, these patients were provided the Operant Behavior Treatment as usual)

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
		led by the same behavior therapist using a book about pain written for pain patients plus group listening to music; EMG biofeedback was demonstrated once in this condition					
Stans 1989 ²¹²	treatment team included anesthesiologist ; patients taught about gate-control concepts of pain	most clinical contact during inpatient week was conducted by two clinical psychologists, participation from a psychiatrist; relaxation and sensory awareness skills, controlled breathing techniques, imagery and mental activity strategies as methods of coping with pain and stress; training in cognitive restructuring	physical therapy to stretch and strengthen debilitated muscles by general mobilization exercises; clinical team included a psychomotor therapist and several physiotherapists	informal lecture discussion on pain theory, medications, training in coping skills	based on manual from Turk et al. (cognitive-behavioral treatments for pain)	3 individual pre-treatment sessions to learn about treatment approach and gain pt buy-in to therapy; 1 week inpatient treatment; 6 mos outpatient follow-up treatment	
Sterner 2001 ²¹³	examined by interdisc team including physician	"programme contained both cognitive and behavioural elements"; team included social worker/psychologist	physical activity including hydrotherapy, body awareness therapy, relaxation	ergonomics, education in pain, pharmacology, stress, and psychological consequences of pain	Mostly group-based, some individual sessions	5 weeks, 3 days per week at one clinic; 8 weeks, 2 days per week at other	
Storro 2004 ²¹⁴	evaluated at intake by	group meetings with MD, PT, and	physical exercises	4 hours education on "mechanisms of pain	groups of 8-10 pts	4 weeks, meeting 3x per	Treatment as usual (GP refers pt to PT,

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
	physical medicine specialist	psychologist to "develop greater insight into the process of pain perception, more self-confidence, reduction of fear-avoidance behavior, and greater skills to cope with pain reduction"	tailored to individual in intensity and dose	perception and how pain can be influenced by psychological and behavioural factors in ways that can be self-reinforcing and thus account for a complex 'vicious circle' of chronic pain"		week for 2 hours; followed by less-structured consultations for 8 weeks	chiropractor, etc)
Suman 2009 ²⁰	Educational sessions to provide medical information about FM conducted by medical experts in rheumatology, sports medicine, and pain treatment; aerobic training conducted by sports medicine doctors with "many years of experience in exercise physiology"	CBT aimed at decreasing distorted pain attributions and increasing self-efficacy expectations; relaxation training	combined aerobic and flexibility training; individualized aerobic training with blood-lactate tests to determine intensity and heart rate monitoring; graded increase in duration; stretching regimes	weekly education sessions (see medical component)		3 weeks, 5 days per week, 7 hours per day	
Suoyrjo 2008 ²¹⁵	team included physician and nurse	team included psychologist and social worker	team included physiotherapist	goal to instruct pts in physical activities, enhance self-care abilities, improve pain management	course offered in groups of 8 to 12 participants; rehab guidelines as detailed by the Social Insurance Institution; noted to be less strenuous than Mayer/Gatchel	2 or 3 inpatient periods over the course of a year, totaling 15-18 days	

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
Tollison 1985 ²¹⁶	full-time staffing includes physical medicine and rehab and rehab nursing; medications managed/reduced	relaxation therapy daily, daily individual and group psychotherapy	3 daily classes of physical reconditioning, walking, standing, bicycle riding, ROM, physical endurance	daily didactic lectures and discussions led by psychologists, nurses, PTs, and vocational counselors to explain the continuing mechanism of chronic pain, the value of proper body mechanics, etc.; discussions of problems dealing with sexuality and physical disability; how secondary gains can be associated with chronic benign pain	operant conditioning	3-4 weeks, average 25 days)	
Tollison 1989 ²¹⁷	nerve block evaluation and physical medicine modalities, medication treatment	relaxation training, behavior modification, individual and group psychotherapy	PT, physical strengthening, stamina, and endurance	instruction in body mechanics, variety of educational classes		approximately 18 days	
Tollison 1990 ²¹⁸	nerve block evaluation and physical medicine modalities, medication treatment	relaxation training, behavior modification, individual and group psychotherapy	PT, physical strengthening, stamina, and endurance	instruction in body mechanics, variety of educational classes		approximately 18 days	
Trief 1995 ²¹⁹	medical director is an orthopedic surgeon/spine specialist; all pts evaluated at	training in relaxation using biofeedback; group and individual	PT program of individualized exercise to promote flexibility,	OT program of education in back protection and body mechanics		4-6 weeks, 5 days per week, 6-7 hrs per day	

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
	referral; "if appropriate" pts are placed on a medication withdrawal program monitored by staff nurse	psychological counseling and vocational counseling	strength and aerobic fitness				
Turk 1998 ¹²	Pretreatment assessment; 3 1-hr group sessions conducted by a physician trained in pain medicine; 1 brief individual session to monitor medication and address concerns	six 1-hr group sessions conducted by psychologist, designed to be interactive, based on the cognitive-behavioral model; included relaxation, cognitive restructuring, problem solving skill training	four 1-hr group sessions with physical therapist to help pts understand associations among conditioning, aerobic capacity, endurance, and fatigue; 6 1-hr exercise sessions including aerobic and stretching exercises; 6 1-hr OT educational sessions (group) including body mechanics, energy conservation, and pacing	included with all three other components-- educational/didactic sessions	group treatment, group size 4 to 7	6 half-day sessions spaced over 4 weeks (3 sessions in week one, 1 session per week for remaining 3 weeks)	
Turner-Stokes 2003 ⁷⁶	program staff includes medical staff, all pts received initial	program staff includes psychologist, who provided 24 hrs of	program staff includes a PT and an OT who each provided	included with other components	groups of 8-10 people	1 afternoon per week for 8 weeks	Same information as group program, but delivered by a psychologist

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
	clinical assessment; physician provided 10 hrs of direct patient contact plus 8 hours of meetings/documentation	direct patient contact plus 8 hours of meetings/documentation; program was CBT based, included relaxation and use of cognitive coping strategies	8 hrs of direct patient contact plus 8 hours of meetings/documentation; pts were encouraged to exercise and pace their daily activities at home				individually; pts had an assessment by a PT before treatment, which informed the recommendations about physical activity and exercises-- recommendations were then delivered by the psychologist
van Wilgen 2009 ²²⁰	Clinical phase run by a team including a physician; education on bio-psycho-social explanation for pain to replace the bio-medical explanation pts may have had; counseling from a physician 2 hrs per week; medication reduction: all analgesics and pain-related drugs reduced from first day of admission, with aim of no medication within 2 weeks	team running clinical phase includes a psychologist, clinical phase is a cognitive-behavioral model, including 4 hrs per week of psychological treatment, operant treatment, reconceptualization, desensitization, time-management, pacing and self-efficacy, relaxation techniques	physiotherapy 5 hrs per week, exercises, stretching, and PT through a graded activity program, cycling, walking, swimming	included with other components, especially the reconceptualization phase, which began in the pre-clinical phase and involved dealing with "unrealistic thoughts about bodily sensations, the use of medications, altered self-image, lack of control of movements and/or the performance of physical exercises"	participation of a close family member or friend "if necessary"; at discharge, all pts had to have a family member or friend at the evaluation meeting	inpatient clinical phase lasted 3 to 6 weeks	waitlist time for the patients (i.e., not a different population)
Vendrig 1999 ²²¹	Orthopedic surgeon or neurologist on team; all team	group sessions included discussion/training to identify and	graded activity to eliminate inappropriate pain behaviors	group sessions, back school, stress management	Group participation (group size ~6); stated to be based on Mayer and	4 week duration	

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
	members provided group sessions; clinical assessment before treatment	modify maladaptive behaviors, enhance adequate coping skills, and improve emotional awareness	and restore muscle strength, endurance, and aerobic fitness; sports including squash and swimming		Fordyce		
Vendrig 2000 ²²²	Orthopedic surgeon or neurologist on team; all team members provided group sessions	12 group sessions with clinical psychologist to identify and modify maladaptive behaviors, enhance adequate coping skills, and improve emotional awareness	graded activity to eliminate inadequate pain behaviors and restore muscle strength, endurance, and aerobic fitness	group sessions, back school, stress management	Group participation (group size ~6); stated to be based on Mayer and Fordyce	4 week duration	
Vendrig 2000 ²²³	assessment by orthopedic surgeon or neurologist before treatment	PT is based on operant learning principles to abolish inappropriate pain behavior; group sessions addressing pts' beliefs regarding symptoms and disabilities	graded activity program; sports, swimming, squash	education on pain behavior, symptoms and disabilities		4 weeks, daily	
Verra 2009 ²²	regular medical consultations (1 hour/week) including drug therapy	individual psychotherapy including cognitive behavioral therapy; participation in a behavioral	5-6 daily sessions of individual, active PT (average 5 hours per	3 hours per week of education about pathophysiology and management of chronic disabling pain	traditional Chinese medicine, mainly Qigong (3 hours per week)	4-weeks	

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
		therapeutically oriented pain coping/management group, creative activities, relaxation therapy	week); aerobic endurance training				
Vines 1996 ²²⁴	core disciplines include nursing and physiatry	rehab nurses and social work team teach pts about effective communication, problem solving, conflict resolution, stress management, and relaxation techniques for pain control	pool therapy, stretching, strengthening exercises	nutrition classes, education on proper body mechanics		4 weeks, 40 hours per week	
Vines 2000 ²²⁵	core disciplines include nursing and physiatry	rehab nurses and social work team teach pts about effective communication, problem solving, conflict resolution, stress management, and relaxation techniques for pain control	pool therapy, stretching, strengthening exercises	nutrition classes, education on proper body mechanics		4 weeks, 40 hours per week	
Vollenbroek-Hutten 2004 ²²⁶	supervised by a specialist in physical and rehabilitation medicine	education aimed at reducing fear of movement and learning skills to make optimal use of the remaining physical capabilities	3 hours conditional training and sport, 0.5 hrs of swimming, 1.5 hrs of OT, and 4 hrs of PT each week for 7 weeks	see behavioral	"if necessary" treatment included psychologist and dietician	8 weeks, including 7 weeks of group treatment, 9 hours per week	usual care outside the treatment center; allowed to enter programme after 6-mo f/u period

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
Vowles 2004 ²²⁷	similar to Mayer/Gatchel; seen by rehab physician at least once per week	3 hrs per day of psychoeducational groups, daily contact with psychology	3 hrs per day of PT and OT; daily contact with PT and OT staff members	part of behavioral; program sought to educate pts about the chronic pain process		4-6 weeks long, 6 hrs per day, 5 days per week	
Vowles 2007 ²²⁸	treatment team includes nurse, physicians	treatment based on Acceptance and Commitment Therapy; daily psychology and relaxation sessions; no direct cognitive restructuring exercises	graded exposure and activation of the whole body in group sessions twice daily	daily health/medical education	group delivered	3 or 4 weeks	
Vowles 2008 ²²⁹	treatment team includes nurse, physicians	treatment based on Acceptance and Commitment Therapy; daily psychology and relaxation sessions; mindfulness training, values clarification; no direct cognitive restructuring exercises	graded exposure and activation of the whole body in group sessions twice daily	daily health/medical education	group delivered	3 or 4 weeks	
Vowles 2010 ²³⁰	treatment team includes nurse, physicians	treatment based on Acceptance and Commitment Therapy; daily psychology and relaxation sessions; mindfulness training, values clarification; no direct cognitive	graded exposure and activation of the whole body in group sessions twice daily	daily health/medical education	group delivered	3 or 4 weeks	

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
		restructuring exercises					
Walsh 2002 ²³¹	facilitators included pain nurse specialist, sessional input from a pharmacists and a rheumatologist; education on pain, anatomy, and biomechanics	facilitators included a clinical psychologist; techniques for goal setting, stress management, relaxation and imagery, challenging negative thoughts, communication skills	facilitators included a PT and an OT; treatment included group exercise sessions	workshop sessions on anatomy, medication usage, etc.	group based (7 to 13 per session, median 11); based on Skinner et al., 1990 and Williams et al., 1996	9 days spread over 5 weeks, 7 hours per day; plus half-day review sessions 3 mos after completion	
Walsh 2004 ²³²	facilitators included a pain nurse specialist; all pts assessed by multidisciplinary team including pain physician and a spinal surgeon	facilitators included a clinical psychologist; techniques for goal setting, stress management, relaxation and imagery, challenging negative thoughts, communication skills	group exercise sessions	workshop sessions on anatomy, medication usage, etc.	group based (7 to 13 per session, median 11); based on Skinner et al 1990	9 days spread over 5 weeks, 7 hours per day; plus half-day review sessions 3 and 9 months after completion	
Wang 2008 ⁴⁷	initial evaluation including clinical exam, radiographic exam, and MRI of the cervical or lumbar spine; some education sessions delivered by	improve skills for individual coping and emotional control; psychotherapy, behavioural therapy, both individual and group sessions; daily sessions	physical exercises, ergonomic training, education in back-protection techniques and protective behaviour; goal to increase the	included with physical and behavioral		3 weeks, 8-hrs per day, 5 days per week	

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
	orthopedic surgeon; daily sessions with physician	with psychologist	pts' activity levels at home and day-to-day functioning to facilitate a return to the workplace				
Wasan 2004 ²³³	pharmacological treatment including optimization of pain meds, reduction in opioids if appropriate, and prescription of psych meds	cognitive-behavioral therapy focused on coping skills, pacing, and the maladaptive effects of cognitive distortions on pain perceptions; family therapy	PT addressing disuse syndromes: working on flexibility, strength, and aerobic conditioning; OT to improve performance of activities of daily living through careful planning and appropriate pacing, helping patients find meaningful functional goals	focus of program is "to teach patients skills for maintaining their activity levels and mood, despite persistent pain"	half of patients received ECT, based on attending psychiatrist's assessment of severity of depression symptoms and history of previous treatments	non-ECT cases averaged 20.6 days inpatient treatment; ECT cases averaged 40.4 days (due to ECT treatments--average of 10 per patient, range 3 to 20)	
Williams 1993 ²³⁴	Treatment team includes anesthetist and a nurse; reduction of medication intake; initial clinical exam; see education component as well	"all programme staff applied behavioural principles to all relevant areas of patient activity and inactivity"; treatment team includes 2 psychologists; simple relaxation techniques taught; distraction	Exercise and therapeutic stretch routines with performance goals; manageable timed limits established for sitting, standing, walking were established	included with behavioural portion; information provided on causes and treatment of pain, rationale of program, effects of activity and inactivity on the body, effects of medication, sleep management, and techniques for establishing new	offered in cohorts of 5	four weeks, returning home on weekends; program ran 5 days per week, 08:30 to 17:00; outside this time, pts applied methods to their daily routines and activities without direct staff supervision	

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
		and other cognitive techniques taught and practiced daily; standard cognitive approaches to fear and depression were taught	with pacing and gradual and steady increases in time spent on each activity; program staff included PT and OT	habits of thought and behaviour; pts taught in group sessions and given written backup; all treatment staff contributed to education portion			
Williams 1999 ⁴⁹	Treatment team includes anesthetist and a nurse; reduction of medication intake; initial clinical exam; see education component as well	"all programme staff applied behavioural principles to all relevant areas of patient activity and inactivity"; treatment team includes 2 psychologists; simple relaxation techniques taught; distraction and other cognitive techniques taught and practiced daily; standard cognitive approaches to fear and depression were taught	Exercise and therapeutic stretch routines with performance goals; manageable timed limits established for sitting, standing, walking were established with pacing and gradual and steady increases in time spent on each activity; program staff included PT and OT	included with behavioural portion; information provided on causes and treatment of pain, rationale of program, effects of activity and inactivity on the body, effects of medication, sleep management, and techniques for establishing new habits of thought and behaviour; pts taught in group sessions and given written backup; all treatment staff contributed to education portion	offered in cohorts of 5	Inpatient program: four weeks, returning home on weekends; program ran 5 days per week, 08:30 to 17:00; outside this time, pts applied methods to their daily routines and activities without direct staff supervision Outpatient program: eight weeks in single sessions of 3.5 hrs, otherwise, same content	Wait-list for treatment
Wong 2009 ²³⁵	Treatment team includes anesthetist who delivers content on medication usage and takes part in the	Treatment team includes clinical psychologist who delivers content on rationale for self-management, relaxation skills,	Treatment team includes physical therapist who delivers content on pain mechanisms,	included in all other components	3 follow-up group meetings at 6-weeks, 18 weeks, and 44 weeks post-training, when psych and physical assessments are	eight weeks, with one half-day meeting per week; almost entirely group-delivered	

Table D2. Treatment components (continued)

Citation	MPP: Medical Component and Definition	MPP Behavioral Component and Definition	MPP Physical Recondition Component and Definition	MPP Education Component and Definition	Other MPP Components	MPP Length/Frequency	Comparison Treatment Description
	introductory session	distraction, thoughts and feelings, sleep management, coping with flareups, planning for the future, and family involvement	building up tolerance to activities, exercise theory, and leads group exercise; team also includes OT, who delivers content on the activity diary, targeting and pacing, ADLs		completed and content delivered on assertiveness training and topics chosen by patients		
Wormgoor 2008 ²³⁶	comprehensive clinical assessment in physical medicine department	cognitive-behavioral approach with training, educational program, and individual counseling	physical training based on sports medicine approach gradually increasing intensity	educational program addressing difference between hurt and harm, etc.; included with cog-behav		3 weeks inpatient	
Wright 1999 ²³⁷	no info provided--referred to prior PRIDE studies for details	no info provided--referred to prior PRIDE studies for details	no info provided--referred to prior PRIDE studies for details	no info provided--referred to prior PRIDE studies for details	no info provided--referred to prior PRIDE studies for details	no info provided--referred to prior PRIDE studies for details	
Zunin 2009 ²³⁸	pre-treatment screening including clinical assessment by medical director; re-evaluation at least every 2 weeks by medical director, including medication review	group psychotherapy, breathing exercises, meditation, visualisation	therapeutic movement including "elements of physical therapy," Feldenkrais, therapeutic yoga	education on pain, pharmacology of pain medicine, lifestyle, diet, risks and benefits of herbs and supplements	therapy provided in groups; program also included introduction to Ho'oponopono led by indigenous Hawaiian practitioner (practice focused on bringing relationships into equilibrium), acupuncture, meditation	12 weeks, three sessions per week, each 3 hours long	

Table D3. Outcomes

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
Altmaier 1992 ⁹²	none published	Pain	Self-reported pain	McGill Pain Questionnaire (MPQ): Present Pain Intensity and Pain Rating Index	before treatment, after treatment, 6-month follow-up
		Physical Functioning	Disability	Low Back Pain Rating Scale	before treatment, after treatment, 6-month follow-up
			Self-reported pain	West Haven-Yale Multidimensional Pain Inventory (WHYMPI): Interference and Negative Mood	before treatment, after treatment, 6-month follow-up
		Role functioning	return to employment	conservative measure: fully employed at same or equivalent job; liberal measure: return to work part-time, working full-time or part-time at same job or lower level, or actively training for a different job	before treatment, after treatment, 6-month follow-up
Jensen 1992 ¹⁵⁸	BDI at admission, number of pain areas, duration of pain, MPQ Pain Rating Index, presence of low back pain	Emotional Functioning Physical Functioning	Dysfunction among chronic pain patients	Sickness Impact Profile (SIP)	Screening, admission, 3-mo post-treatment
Rainville 1992 ²⁰³	sex	Pain	Pain	Pain analog	initial evaluation, program completion
				pain drawing	initial evaluation, program completion
				various: pain with flexion, pain with extension, straight leg raising pain, pain with lifting, pain with bicycle, pain with upper body ergometer	initial evaluation, program completion
	Physical Functioning	physical performance	various: flexion, extension, straight leg raising degrees, lbs lifted, bicycle minutes, upper body ergometer minutes	initial evaluation, program completion	
Davis 1992 ¹¹⁷	none reported	Physical Functioning	Aerobic fitness	10 exercise indices including VO2 max, METS, WATTS, heart rate, ventilation, etc.	pre- and post-treatment
France 1991 ¹³²	CSF beta-endorphin concentration pre- and post-treatment	Pain	pain change	percentage of pain relief	1 month post treatment

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
Connally 1991 ¹¹⁴	pain intensity, duration, number of surgeries, compensation, med usage, activity level, impairment rating, overt pain behavior after lumbar blocks	Clinician or surrogate ratings of global improvement	independent impairment rating	AMA criteria for quantification of impairment	post-treatment
		Pain	pain intensity	VAS	pre- and post-treatment
		Pharmacoeconomic/h ealthcare use	Medication Quantification Scale	MQS	pre- and post-treatment
		Physical Functioning	Self-reported uptime	daily hours spent out of bed	pre- and post-treatment
Hazard 1991 ¹⁴⁸	demographics, physical capacity at initial evaluation, pain intensity, disability exaggeration (modeled using self-assessment of pain and disability compared to physical capacity, in relation to peers)	Emotional Functioning	Self-assessments of pain, disability, depression	BDI	admission, discharge, 1-yr f/u
		Pain	Self-assessments of pain, disability, depression	MVAS	admission, discharge, 1-yr f/u
		Participant disposition	Program completion	binary	N/A
		Physical Functioning	Self-assessments of pain, disability, depression	Oswestry	admission, discharge, 1-yr f/u
		Role functioning	Work status	binary	1 yr post treatment, 2 yrs post treatment

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
Mohler 1991 ¹⁹¹	pain duration	Clinician or surrogate ratings of global improvement	ratings on 9 "problem areas": medication intake, knowledge of condition, body mechanics, activities of Daily Living, physical condition, functional limitations, employability, psychological adjustment, reported pain	measures rated by treating therapists from the different disciplines	pre-treatment, discharge, follow-up (5 to 17 weeks later, mean 8 weeks)
Deardorff 1991 ⁷³	treated vs. not treated	Pain	subjective pain ratings and interference with daily functioning	self-report on scale of 0 to 100	evaluation, follow-up
		Pharmaco-economic/healthcare use	Medication use	number of potentially addicting medications used	evaluation and f/u
		Physical Functioning	physical functioning	body mechanics evaluation and number of repetitions performed of various exercises	evaluation and discharge, treated group only
		Role functioning	employment or vocational rehab status	employed at original position or alternative position, vocational rehab or interviewing, unable to work due to pain	(blank)
Tollison 1990 ²¹⁸	Compensated vs. uncompensated (i.e., worker's comp)	Pain	Subjective pain intensity	daily 5-pt scale	pre-treatment, discharge, follow-up (3 months)
		Pharmaco-economic/healthcare use	Healthcare utilization	additional visits to physicians or hospitalization for pain	pre-treatment, discharge, follow-up (3 months)
			medication intake	number of pain medications used	pre-treatment, discharge, follow-up (3 months)
		Physical Functioning	Physical activity	objective physical recordings of strength, stamina, and overall functional activity	pre-treatment, discharge, follow-up (3 months)

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		Role functioning	Return to productivity	full-time employment or school/vocational training	follow-up (3 months)
Kohles 1990 ¹⁶⁸	earlier or later cohort; sex	Physical Functioning	Range of motion and strength measures	multiple	admission and discharge
Chapman 1990 ¹¹⁰	consistent vs. inconsistent patients	Clinician or surrogate ratings of global improvement	Pain dramatization	rating by physician	beginning and end of treatment
		Pain	pain intensity	VAS	beginning and end of treatment
		Physical Functioning	Activity	Activity diary	beginning and end of treatment
Snow 1990 ²¹⁰	n/a	Role functioning	vocational status	(blank)	not stated
Cott 1990 ¹¹⁵	with and without field consultant; initial status (working vs. not)	Role functioning	return to work	return to regular work; reduced work disability; job change/retrain; retired, not disabled; remained disabled	3 mos post-treatment
Skinner 1990 ²⁰⁷	none reported	Emotional Functioning	Distress	VAS	assessment; pre-treatment (4 weeks after assessment); end of treatment; 4-wk f/u
			Sensory, affective, and behavioural aspects of pain	PLOC	assessment; pre-treatment (4 weeks after assessment); end of treatment; 4-wk f/u
				PRQ	assessment; pre-treatment (4 weeks after assessment); end of treatment; 4-wk f/u
				Speilberger 'State' Anxiety Scale	assessment; pre-treatment (4 weeks after assessment); end of treatment; 4-wk f/u

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
				Zung Self Rating Depression Scale	assessment; pre-treatment (4 weeks after assessment); end of treatment; 4-wk f/u
		Pain	pain intensity	VAS	assessment; pre-treatment (4 weeks after assessment); end of treatment; 4-wk f/u
			Sensory, affective, and behavioural aspects of pain	MPQ	assessment; pre-treatment (4 weeks after assessment); end of treatment; 4-wk f/u
		Pharmacoeconomic/h ealthcare use	Medication use	Number of analgesic tablets taken per week	assessment; pre-treatment (4 weeks after assessment); end of treatment; 4-wk f/u
		Physical Functioning	Sensory, affective, and behavioural aspects of pain	ODI	assessment; pre-treatment (4 weeks after assessment); end of treatment; 4-wk f/u
Maruta 1990 ¹⁷⁹	outcome at dismissal compared to outcome at follow-up	Clinician or surrogate ratings of global improvement	improvement in physical function	5 categories based on pt behavior and activity; assessment at dismissal ranged from worst ("no change") to best ("had maximally indicated physical function; was performing most routine work-equivalent activities; initiated physical activities; needed no supervision"); assessment at f/u ranged from worst ("marked decrease in work status") to best ("marked increase in work status or no change in work status if working full-time before entering pain management)	dismissal, 3-yr f/u
			modification of attitude	5 categories based on pt behavior and beliefs: assessment at dismissal ranged from worst ("rejection of program by leaving prematurely") to best ("fully accepted need to live with pain; had concrete plans to follow through; was able	dismissal, 3-yr f/u

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
				to self-reinforce good behavior and enjoy being active; relatives participated fully in program"); assessment at f/u ranged from worst ("operation [surgery] for the chronic pain problem") to best ("no further treatment for chronic pain")	
		Pharmacoeconomic/healthcare use	reduction in medication	5 categories based on pt behavior and medication use; assessment at dismissal ranged from worst ("unsuccessful; resisted medication reduction and left program") to best ("was off medication; was strongly motivated to stay off maintenance medication and verbalized problems with drug use; appreciated drug-free status"); assessment at f/u ranged from worst ("addicted to pain medication") to best ("off all pain medication")	dismissal, 3-yr f/u
Stans 1989 ²¹²	none reported	Coping	Coping Strategies	open-ended questionnaire looking at cognitive and behavioral coping strategies	pre-treatment, post-treatment, 6-mo f/u
		Emotional Functioning	Anxiety and depression	STAI-Trait anxiety	pre-treatment, 6-mo f/u
				Zung rating-scale	pre-treatment, 6-mo f/u
		Pain	pain intensity	average pain severity on 6-pt scale	pre-treatment, post-treatment, 6-mo f/u
		Pharmacoeconomic/healthcare use	analgesic medication use	self-reported frequency of medication intake	pre-treatment, post-treatment, 6-mo f/u
		Physical Functioning	activity level	up-time, down-time, activities	pre-treatment, post-treatment, 6-mo f/u
Tollison 1989 ²¹⁷	acute vs. chronic pain	Pain	Subjective pain intensity	daily 5-pt scale	pre-treatment, discharge, follow-up (3 months)
		Pharmacoeconomic/healthcare use	Healthcare utilization	additional visits to physicians or hospitalization for pain	pre-treatment, discharge, follow-up (3 months)
			medication intake	number of pain medications used	pre-treatment, discharge, follow-up (3 months)
		Physical Functioning	Physical activity	objective physical recordings of strength, stamina, and overall functional activity	pre-treatment, discharge, follow-up (3 months)

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		Role functioning	Return to productivity	full-time employment or school/vocational training	follow-up (3 months)
Hazard 1989 ¹⁴⁷	Depression, pain, disability, sex, working/not working	Emotional Functioning	Self-assessments of pain, disability, depression	BDI	initial eval, discharge, 6-12 week f/u, year-end f/u for completers; initial only for comparison and dropouts
		Pain	Self-assessments of pain, disability, depression	MVAS	initial eval, discharge, 6-12 week f/u, year-end f/u for completers; initial only for comparison and dropouts
		Physical Functioning	Physical capacity	Quantitative Functional evaluations including flexibility, lifting, flexion, extension, endurance	initial eval, discharge, 6-12 week f/u, year-end f/u for completers; initial only for comparison and dropouts
			Self-assessments of pain, disability, depression	Oswestry	initial eval, discharge, 6-12 week f/u, year-end f/u for completers; initial only for comparison and dropouts
		Role functioning	return to work	telephone interview, in-person interview, or mail questionnaire (all 90 subjects were reached)	1 yr (6 months for the crossover pts)
Polatin 1989 ¹⁹⁸	many pre-treatment variables-- psychological, demographic, surgery history, physical flexibility/strength, medications,	Participant disposition	treatment completion	completion, drop out, failed to enter	(blank)

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
	diagnosis, compensation, time missed work, job type				
Cassisi 1989 ¹⁰⁹	Participants vs. control groups	Role functioning Pain	treatment success Pain	working 1 year post treatment MPQ	1 year initial assessment, average 22-23 months after initial assessment
		Participant ratings of global improvement and satisfaction with treatment	For treatment completers, satisfaction with/attitudes toward treatment	interview	average 22-23 months after initial assessment
		Pharmacoeconomic/h ealthcare use	medical treatments	interview/self-report	initial assessment, average 22-23 months after initial assessment
		Physical Functioning	Disability	Owestry low back pain disability questionnaire	initial assessment, average 22-23 months after initial assessment
		Physical functioning Role functioning	Global level of functioning	rating system developed by Prolo et al.	initial assessment, average 22-23 months after initial assessment
		Role functioning	Employment status	rating system developed by Prolo et al.	initial assessment, average 22-23 months after initial assessment
Snow 1988 ²⁰⁹	pts who completed both inpatient and outpatient vs. pts who completed inpatient only	Multiple	self-reported pain-related behaviors	use of medication, health care use, decrease in pain, coping with pain, sleep, time spent in bed, walking ability, loneliness, social activities, family relationship quality	preadmission, follow-up (average 2 yrs post treatment, range 10 to 39 months)
		Role functioning	Work status	paid employment, work training, retirement with active pursuit of outside hobbies, or functioning actively as a homemaker	preadmission, follow-up (average 2 yrs post treatment, range 10 to 39 months)

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing	
Tollison 1985 ²¹⁶	none reported	Pain	Subjective pain intensity	daily 5-pt scale	pre-treatment, discharge, follow-up (12 months)	
			Pharmacoeconomic/healthcare use	Healthcare utilization	additional visits to physicians or hospitalization for pain	pre-treatment, discharge, follow-up (12 months)
				medication intake	number of pain medications used	pre-treatment, discharge, follow-up (12 months)
		Physical Functioning	Physical activity	objective physical recordings of strength, stamina, and overall functional activity	pre-treatment, discharge, follow-up (12 months)	
		Role functioning	Return to productivity	full-time employment or school/vocational training	pre-treatment, discharge, follow-up (12 months)	
Gatchel 1986 ¹³⁷	sex	Emotional Functioning	psychological functioning	MMPI	intake, 6-mo f/u	
				Self-report psychological assessment created for persons being treated/ assessed in medical settings for physical disorders	Millon Behavioral Health Inventory (MBHI)	intake, discharge, 3-mo, 6-mo f/u
				self-reported pain/disability	BDI	intake, discharge, 3-mo, 6-mo f/u
		Pain	self-reported pain/disability	analogue rating	intake, discharge, 3-mo, 6-mo f/u	
				pain drawing	intake, discharge, 3-mo, 6-mo f/u	
	Physical Functioning	Physical Function	numerous quantified physical measures of strength, extension, flexion	Admission, discharge, 3-mo f/u		
Mayer 1986 ¹⁸³	change in trunk strength; ROM scores	Emotional Functioning	Psychological testing	BDI	admission, 3 mos post-treatment for PRIDE group	
				Million Analog	admission, 3 mos post-treatment for PRIDE group	
				pain drawing	admission, 3 mos post-treatment for PRIDE group	

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		Litigation and claims	resolution of workers compensation litigation	%	avg 5 mos post-treatment for PRIDE group
		Pharmacoeconomic/healthcare use	additional back surgery	%	avg 5 mos post-treatment for PRIDE group; approx. 11-15 mos for comparison
			additional medical care	number of hospitalizations, studies, visits to other physicians	avg 5 mos post-treatment for PRIDE group
		Physical Functioning	Functional capacity	variety of physical exams (strength, flexion/extension)	admission, 3 mos post-treatment for PRIDE group
		Role functioning	return to work	full-time work, full-time training, inactive	avg 5 mos post-treatment for PRIDE group; approx. 11-15 mos for comparison
Gatchel 1986 ¹³⁶	sex, MBHI scales	Emotional Functioning	psychological functioning	MMPI	intake, 6-mo f/u
			Self-report psychological assessment created for persons being treated/ assessed in medical settings for physical disorders	Millon Behavioral Health Inventory (MBHI)	intake, discharge, 3-mo, 6-mo f/u
			self-reported pain/disability	BDI	intake, discharge, 3-mo, 6-mo f/u
		Pain	self-reported pain/disability	analogue rating	intake, discharge, 3-mo, 6-mo f/u
				pain drawing	intake, discharge, 3-mo, 6-mo f/u
		Physical Functioning	Physical Function	numerous quantified physical measures of strength, extension, flexion	Admission, discharge, 3-mo f/u
Mayer 1987 ¹⁸⁴	sex	Emotional Functioning	self-report psychological measures	BDI	admission, 3 mos post-treatment for treatment completers
				Million Analog	admission, 3 mos post-treatment for treatment completers

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		Pain	self-report psychological measures	pain drawing	admission, 3 mos post-treatment for treatment completers
		Pharmacoeconomic/healthcare use	additional back surgery	% of pts having	1-yr f/u, 2-yr f/u
			visits to health care professionals	% pts visiting new professionals for same injury/pain; number of visits	1-yr f/u, 2-yr f/u
		Physical Functioning	Functional capacity	variety of physical exams (strength, flexion/extension)	admission, 3 mos post-treatment for treatment completers
		Role functioning	return to work	working or in a training program	1-yr f/u, 2-yr f/u
Kleinke 1988 ¹⁶⁷	preference for treatment modalities	Clinician or surrogate ratings of global improvement	Behavioral ratings by Primary Nurse	Activity (4 pt scale from none to exerts leadership [in being active]), pain behavior (4 pt scale from none to almost constant)	first and last weeks of program
		Emotional Functioning	Depression	BDI	first and last weeks of program
			mood	Profile of Mood States (POMS)	first and last weeks of program
			Pain behaviors: grimacing, guarded movement, bracing, position shifts, partial movement, limitation statements, sounds	Audiovisual Taxonomy: videotaped sessions of performing activities (walking, picking up an object, etc) which are rated for percentage of intervals during which pain behaviors occur	first and last weeks of program
			Self-handicapping	pt self-rating of how their physical performance on AV Taxonomy items would be hindered by pain problem	first and last weeks of program
		Pain	Pain	MPQ	first and last weeks of program
Mayer 1988 ¹⁸⁵	sex	Physical Functioning	Functional capacity	variety of physical exams (strength, flexion/extension)	admission, discharge
Guck 1988 ¹⁴⁵	MMPI subgroups, sex, pretreatment variables/demographics	Emotional Functioning	Depression	BDI	1 to 5 yrs following treatment
		Pain	Pain	VAS for a good day, bad day, monthly average, today	1 to 5 yrs following treatment
		Pharmacoeconomic/healthcare use	health treatments	number of pain-related hospitalizations, number of pain-related surgeries, use of nonnarcotic, narcotic, and psychotropic medications	1 to 5 yrs following treatment

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		Physical Functioning	Functional capacity	ability to do work, do yardwork/shop, socialize, recreate, exercise, sleep	1 to 5 yrs following treatment
		Role functioning	Socioeconomic	employment status, financial compensation, pending litigation	1 to 5 yrs following treatment
Middaugh 1988 ¹⁹⁰	age (55+ vs. younger than 55)	Emotional Functioning	Psychologic functioning	SCL-90R	evaluation and follow-up (6-12 mos later)
		Pain	VAS	current, maximum, minimum pain levels	evaluation and follow-up (6-12 mos later)
		Pharmacoeconomic/h ealthcare use	health care use	number of visits to doctor, ER, and hospital	evaluation and follow-up (6-12 mos later)
			medication intake	MQS	evaluation and follow-up (6-12 mos later)
		Physical Functioning	length of time pt was able to walk	(blank)	evaluation and follow-up (6-12 mos later)
			uptime daily	time spent out of a reclining position	evaluation and follow-up (6-12 mos later)
		Role functioning	Employment status	hours per week spent in in paid employment, housework, yardwork, childcare, volunteer work, or school	evaluation and follow-up (6-12 mos later)
Moore 1986 ²⁴	MMPI subgroups	Emotional Functioning	Moods: tension, depression, anger, vigor, fatigue, confusion	Profile of Mood States (POMS)	before and after treatment; also 2-5 mos before treatment for the 32 pts who were initially waitlisted
			Personality characteristics	MMPI	before and after treatment; also 2-5 mos before treatment for the 32 pts who were initially waitlisted
				Rathus Assertiveness Schedule (RAS)	before and after treatment; also 2-5 mos before treatment for the 32

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
					pts who were initially waitlisted
				Tennessee Self-Concept Scales (TSCS)	before and after treatment; also 2-5 mos before treatment for the 32 pts who were initially waitlisted
		Interpersonal Functioning	Sexual functioning	monthly frequency; % normal desire; % normal ability	before and after treatment; also 2-5 mos before treatment for the 32 pts who were initially waitlisted
		Pain	Pain severity	Pain Appraisal Inventory	before and after treatment; also 2-5 mos before treatment for the 32 pts who were initially waitlisted
		Physical Functioning	Activity diaries	Kept by pts and monitored by nursing staff; time spent standing/walking, sitting, reclining, and sleeping	duration of treatment
			sleep dysfunction	(blank)	before and after treatment; also 2-5 mos before treatment for the 32 pts who were initially waitlisted
Doleys 1986 ¹²⁰	Pre-treatment narcotics usage	Pain	Hourly subjective pain ratings	24-hour daily sheet as described by Fordyce	evaluation period, pretreatment, post-treatment
Bendix 1995 ⁸¹	treatment group	Pain	pain: back and leg	scale 0 to 10	4-mo f/u
		Pharmacoeconomic/healthcare use	contacts with health care system	count	before treatment, 4-mo f/u
		Physical Functioning	function	15 questions about back problem interference with ADLs (Low back pain rating scale)	4-mo f/u
			physical activity	"are you participating in any kind of physical sports activity?"	4-mo f/u
		Role functioning	days of sick leave	count	before treatment, 4-mo f/u

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
			Work readiness	working, studying/training, or looking for work ("As Denmark has a high unemployment rate, nobody is guaranteed a job")	before treatment, 4-mo f/u
Trief 1995 ²¹⁹	BDI scores at preprogram	Clinician or surrogate ratings of global improvement	Physical Therapy	% improvement overall, as rated by therapists: 0-20%, 21-40%, 41%+	discharge
			Psychology	Therapist-rated adjustment/progress (3 categories)	discharge
			Vocational	Therapist-rated involvement/progress (3 categories--top category is "employed on admission or scheduled to return to work or school")	discharge
		Other	Biofeedback	Therapist-rated awareness and control, use of skills (3 categories)	discharge
			Occupational Therapy	Therapist-rated knowledge and application of body mechanics principles (3 categories)	discharge
Jensen 1995 ¹⁵⁵	deteriorated vs. improved; treatment group	Emotional Functioning	Anxiety	VAS, recorded 3 times per day for 7 days	pre treatment, post treatment, 6-mo f/u
			helplessness	Arthritis Helplessness Index (modified for neck/shoulder pain)	pre treatment, post treatment, 6-mo f/u
		Interpersonal Functioning	marital satisfaction	Index of Marital Satisfaction Scale	pre treatment, post treatment, 6-mo f/u
		Pain	pain intensity	VAS, 3 times per day for 7 days	pre treatment, post treatment, 6-mo f/u
		Physical Functioning	Disability	Stanford Health Assessment Questionnaire	pre treatment, post treatment, 6-mo f/u
		Role functioning	Absenteeism	info on sick leave from national health insurance authority	one-year prior to treatment, 1.5 years after treatment
Chapman 1994 ¹¹¹	MMPI clusters (seven)	Pain	Subjective pain intensity	VAS	pre-treatment and post-treatment, follow-up (6 to 66 months after end of treatment)
		Pharmacoeconomic/healthcare use	Medication use	Medication diary; "Use" defined as taking 2 or more tablets per week for each of 6 categories (opiates, barbiturates, tranquilizers, non-narcotic pain meds, antidepressants, and phenothiazines)	pre-treatment and post-treatment, follow-up (6 to 66 months after end of treatment)

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		Physical Functioning	activity level	Activity Diary described by Chapman et al. 1981	pre-treatment and post-treatment, follow-up (6 to 66 months after end of treatment)
		Role functioning	Current work or school status	self-report	follow-up (6 to 66 months after end of treatment)
Gatchel 1994 ¹³⁸	Axis I and Axis II psychological disorders	Role functioning	return to work	full-time or part-time employment at 1-yr post-treatment period	1-yr
Jensen 1994 ¹⁵⁹	change in pain beliefs (Survey of Pain Attitudes), change in coping responses/behaviors (CSQ plus number of days out of past week when 7 further strategies were used), age, pain intensity	Emotional Functioning	psychological functioning	BDI	admission, f/u (3-6 mos)
		Pharmacoeconomic/healthcare use	Use of medical services	number of pain-related visits made to physicians during prior 3 months	admission, f/u (3-6 mos)
		Physical Functioning	physical functioning	Physical Dysfunction scale of SIP	admission, f/u (3-6 mos)
Alaranta 1994 ⁹¹	sex, age	Emotional Functioning	Pain and Disability Index	Million index	baseline, 12-month follow-up
			psychological measures	self-report questionnaires, modified for study, taken from BDI, Symptom Check List, Multidimensional Health Locus of Control, Social Adjustment Scale; Karolinska Scales of Personality	baseline, 3-month, 12-month except Karolinska not assessed at 3-month f/u
		Pharmacoeconomic/healthcare use	Use of Medical Care Services	number of visits to doctors and outpatient PT periods	baseline and 12-month follow-up
		Physical Functioning	physical measurements	flexibility of trunk, muscular strength and endurance	baseline, 3-month, 12-month follow-ups
			Pt. reported physical performance and	questionnaire	baseline, 3-month, 12-month follow-up

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
			leisure time physical activities		
		Role functioning	Sick-leave days and occupational handicap	number of sick leave days in previous year (Social Insurance Institution data), WHO occupational Handicap	baseline, 12-month f/u
Jensen 1994 ¹⁵⁶	treatment, control, reference group (all pts treated, including those who could not be matched to controls)	Emotional Functioning	Anxiety	VAS, recorded 3 times per day for 7 days	baseline, before treatment, end of treatment, 6-mo f/u
			Depression	BDI	baseline, before treatment, end of treatment, 6-mo f/u
		Pain	pain intensity	VAS, recorded 3 times per day for 7 days	baseline, before treatment, end of treatment, 6-mo f/u
		Physical Functioning	Disability	Health Assessment Questionnaire	baseline, before treatment, end of treatment, 6-mo f/u
		Role functioning	absenteeism	leave of absence details from National Health Insurance authority for 1 year before treatment and 6 months after	(blank)
Scharff 1994 ²⁵	0	Pain	self-report of headache pain	Headache Index (incorporates headache intensity and frequency)	pre-treatment, follow- up (6-7 mos later)
Mayer 1994 ¹⁸⁰	sex, discectomy status (yes/no)	Physical Functioning	Functional capacity	variety of physical exams (strength, flexion/extension)	intake, intensive phase admission, follow-up (varies)
Rainville 1993 ²⁰⁴	completers vs. drop outs	Emotional Functioning	Depression	BDI	pre-treatment, post- treatment (completers only)
			Pain and impairment beliefs	Pain and Impairment Relationship Scale (PAIRS) scale scores	pre-treatment, post- treatment (completers only)
		Pain	Pain	Pain intensity score on VAS	pre-treatment, post- treatment (completers only)
				quantified pain drawing	pre-treatment, post- treatment (completers only)

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		Participant disposition	Completion vs. drop out	binary	N/A
		Physical Functioning	Disability	MVAS	pre-treatment, post-treatment (completers only)
Williams 1993 ²³⁴	none reported	Emotional Functioning	Confidence performing activities despite pain	Pain Self-Efficacy Questionnaire	pre-treatment, post-treatment, 1-mo f/u, 6-mo f/u
			Depression	BDI	pre-treatment, post-treatment, 1-mo f/u, 6-mo f/u
		Other	Use of program coping strategies (exercise, stretch, relaxation)	frequency, self-reported	1-mo f/u, 6-mo f/u
		Pharmacoeconomic/healthcare use	Medication use	NSAIDS, opioid analgesics, antidepressants, benzodiazepines, other	pre-treatment, post-treatment, 1-mo f/u, 6-mo f/u
		Physical Functioning	Impact of pain on day-to-day functioning	SIP (Sickness Impact Profile)	pre-treatment, post-treatment, 1-mo f/u, 6-mo f/u
			physical functioning	10-minute walk	pre-treatment, post-treatment, 1-mo f/u, 6-mo f/u
				sit-ups to tolerance	pre-treatment, post-treatment, 1-mo f/u, 6-mo f/u
				stairs climbed in 2-minutes	pre-treatment, post-treatment, 1-mo f/u, 6-mo f/u
Sanders 1993 ²⁶	Cluster analysis based on Sickness Impact Profile (SIP) and Medical Examination and Diagnostic Information Coding System (MEDICS)	Emotional Functioning	Depression	BDI	pre- and post-treatment (3-6 months later)

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		Pain	pain intensity	VAS	pre- and post-treatment (3-6 months later)
		Pharmacoeconomic/h ealthcare use	Medication Quantification Scale	MQS	pre- and post-treatment (3-6 months later)
		Physical Functioning	Self-reported uptime	daily hours spent out of bed	pre- and post-treatment (3-6 months later)
		Role functioning	Employment	% working	pre- and post-treatment (3-6 months later)
Lipchik 1993 ⁴⁸	treatment vs. control	Emotional Functioning	Pain beliefs and perceptions	PBAPI	intake, discharge (or 3-weeks later, for control group)
			Pain locus of control	PLOC	intake, discharge (or 3-weeks later, for control group)
		Pain	Subjective pain intensity	scale 0 to 10	intake, discharge (or 3-weeks later, for control group)
		Pharmacoeconomic/h ealthcare use	Medication usage	all usage recorded: narcotic/non-narcotic analgesics, antidepressants, muscle relaxants, anxiolytics, sedatives/hypnotics, anticonvulsants	intake, discharge (or 3-weeks later, for control group)
Feuerstein 1993 ¹²⁹	0	Role functioning	Vocational Outcome	structured interview by research assistant: employed full time, part time, enrolled in vocational training/retraining, currently unemployed	average 17-18 months
Vines 1996 ²²⁴	none reported	Pain	Pain levels	VAS	admission, discharge, follow-up (3-11 mos after completion)
		Pharmacoeconomic/h ealthcare use	opioid use	self-report	admission, follow-up (3-11 mos after completion)
		Physical Functioning	Activity levels and sleep disturbance	days/nights per week experiencing reduced activity/disturbed sleep	admission, discharge, follow-up (3-11 mos after completion)

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
			down time	total hours per day spent resting	admission, follow-up (3-11 mos after completion)
		Role functioning	role function status	number of hours per week pt was active, whether at job, school, job training, volunteer, household	admission, follow-up (3-11 mos after completion)
Bendix 1996 ⁴³	treatment vs. control	Pain	pain: back and leg	scale 0 to 10	4-mo f/u
		Pharmacoeconomic/h ealthcare use	contacts with health care system	count	4-mo f/u
		Physical Functioning	function	15 questions about back problem interference with ADLs (Low back pain rating scale)	4-mo f/u
			isometric back-muscle endurance	Biering-Sørensen test	4-mo f/u
		Role functioning	Work readiness	working, studying/training, or looking for work ("As Denmark has a high unemployment rate, nobody is guaranteed a job")	4-mo f/u
Lynch 1996 ¹⁷⁵	pre- and post-treatment, completers vs. non-completers, hopelessness	Coping	Coping Strategies	Coping Strategy Questionnaire (CSQ)	follow-up
		Emotional Functioning	Depression	BDI	screening, follow-up
			Negative expectancies about future, hopelessness, pessimism	Beck Hopelessness Scale (BHS)	screening, follow-up
		Participant ratings of global improvement and satisfaction with treatment	Activity level, pain status, program satisfaction (if applicable)	Pain Management Program Evaluation Questionnaire (PMPEQ); includes self-report of: employment, exercise activity, flexibility/endurance/strength, pain intensity and type; interference by pain on specific activities; changes in sleep/weight/alcohol consumption	screening, follow-up
Garcy 1996 ¹³⁵	Demographic, physical, psychologic measures before and after treatment	Physical Functioning	new injury	injury to a different musculoskeletal area	within 1 year of treatment completion

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		Role functioning	lost work time after reinjury work retention	self-reported lost work time due to recurrent or new injury not specified	within 1 year of treatment completion one year post-treatment
		Symptoms and adverse events	recurrent injury	another injury to the same spinal area	within 1 year of treatment completion
Elkayam 1996 ^{12b}	Results of CT scan: normal vs. abnormal CT; with/without spinal stenosis; with/without disc bulging	Clinician or surrogate ratings of global improvement	physician rated outcome	Stauffer and Coventry Criteria of Outcome (includes pain relief, physical activity limitations, use of analgesic medications)	end of treatment
		Pain	pain intensity and daily duration	VAS	pre-treatment, post-treatment, 6-mo f/u
		Pharmacoeconomic/healthcare use	medication consumption	no analgesics, NSAIDs, common analgesics, narcotics	pre-treatment, post-treatment, 6-mo f/u
Elkayam 1996 ^{12b}	improvement vs. no improvement for marital status, unemployed/employed, pain location, previous surgery, psychological factors, personality traits (including personality disorders, familial problems, dysthymia, anxiety, OCD, good functioning), "secondary gains" as assessed by psychologist average scores on the following scales are	Clinician or surrogate ratings of global improvement	physician rated outcome	Stauffer and Coventry Criteria of Outcome (includes pain relief, physical activity limitations, use of analgesic medications)	end of treatment

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
	reported by outcome category (poor, moderate, good): centrality of back pain in patient's life, extent of expectations from treatment, extent of support				
		Pain	pain intensity and daily duration	VAS	pre-treatment, post-treatment, 6-mo f/u
		Pharmacoeconomic/healthcare use	medication consumption	no analgesics, NSAIDs, common analgesics, narcotics	pre-treatment, post-treatment, 6-mo f/u
Flavell 1996 ¹³¹	none reported	Pain Emotional Functioning	pain severity, interference, sense of control, negative mood, activity level	WHYMPI	Before treatment, after treatment, 3-mo f/u
		Physical Functioning	physical functioning	4-minute walk test	Before treatment, after treatment, 3-mo f/u
Luoto 1996 ¹⁷³	outcome (good vs. poor) compared to control group; sex	Neuropsychological assessments of cognitive and motor function	postural control	measured with a vertical force platform, looking at change in center of body mass over 15 seconds when patient was standing still	beginning of treatment, 6-mo f/u
			psychomotor speed (reaction time)	measured with accuracy of 1/100 of a second; measured on upper and lower limb	beginning of treatment, 6-mo f/u
		Physical Functioning	Rehab outcome	ODI: restoration considered effective if Oswestry index decreased after treatment	before treatment, 6-mo f/u
Friction 1996 ¹³³	psychosocial items from IMPATH:TMJ instrument	Pain	self-report severity of pain	Symptom Severity Index (SSI)	pretreatment, 6 month f/u
		Physical Functioning	Problems in mandibular movement, TMJ noise, muscle and joint tenderness	Cranio-mandibular Index	pretreatment, 6 month f/u
Chapman 1996 ¹¹²	Treatment Helpfulness Questionnaire	Coping	Coping	Ability to cope with pain and related problems, ranging from 1 to 5	pre-treatment and follow-up (3-6 mos)

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
	response correlations				
		Emotional Functioning	Depression	BDI	pre-treatment and post-treatment
		Pain	Subjective pain intensity	VAS	pre-treatment and post-treatment, follow-up (3-6 months)
		Pharmacoeconomic/healthcare use	Medication use	MQS	pre-treatment and follow-up (3-6 mos)
Hildebrandt 1997 ¹⁵⁰	predictors of back-to-work: application for pension, poor pt. expectation before treatment concerning "back-to-work", time off from work, job as truck driver; educational status, prior hospitalizations, disability (daily functioning); changes in: disability, depression, individual physical treatment; similar analyses conducted for other outcome variables	Coping	Coping	FEKB (German language)	pre-treatment, post-treatment, 6-mo f/u, 12-mo f/u
		Emotional Functioning	Depression	Depressivitäts-Skala	pre-treatment, post-treatment, 6-mo f/u, 12-mo f/u
		Pain	pain intensity	VAS	pre-treatment, post-treatment, 6-mo f/u, 12-mo f/u
		Pharmacoeconomic/healthcare use	Use of health care system	Physician visits and physical treatments in the 12 months before and after treatment	pre, post

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		Physical Functioning	"psychovegetative reports"	psychovegetative reports scale	pre-treatment, post-treatment, 6-mo f/u, 12-mo f/u
			Disability	FFbH	pre-treatment, post-treatment, 6-mo f/u, 12-mo f/u
				PDI	pre-treatment, post-treatment, 6-mo f/u, 12-mo f/u
			physical performance	flexion and extension, strength/lifting capacity, endurance, as measured by PT and physician	pre-treatment, post-treatment, 6-mo f/u, 12-mo f/u
		Role functioning	Work status	back to work ratio	12-mo f/u
Bendix 1997 ⁷⁹	treatment group, drop-outs	Pain	pain: back and leg	scale 0 to 10	before treatment, 12-mo f/u
		Pharmacoeconomic/healthcare use	contacts with health care system	count	before treatment, 12-mo f/u
		Physical Functioning	function	15 questions about back problem interference with ADLs (Low back pain rating scale)	before treatment, 12-mo f/u
			physical activity	"are you participating in any kind of physical sports activity?"	12-mo f/u
		Role functioning	days of sick leave	count	before treatment, 12-mo f/u
			Work readiness	working, studying/training, or looking for work ("As Denmark has a high unemployment rate, nobody is guaranteed a job")	before treatment, 12-mo f/u
Polatin 1997 ¹⁹⁹	Waddell behavioral signs: increase, decrease, no change	Pharmacoeconomic/healthcare use	health utilization (new provider)	seeing new provider for same issue	1-yr f/u
			new surgery to treated area	% reporting	1-yr f/u
		Physical Functioning	Waddell nonorganic signs	(blank)	pre-treatment, post treatment
		Role functioning	return to work	any work during f/u	1-yr f/u
			work retention	"remained working" at time of f/u	1-yr f/u
		Symptoms and adverse events	recurrent injury	% reporting	1-yr f/u

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
Andary 1997 ⁹³	0	Role functioning	Employment status	full-time competitive, part-time competitive, supported/sheltered work, homemaker and student, homemaker only, unemployed	admission to program, discharge from program, most recent follow-up (0 to 36 months following discharge)
Pfungsten 1997 ⁷⁴	predictors of back-to-work: application for pension, poor pt. expectation before treatment concerning "back-to-work", time off from work, change in disability, change in depression	Coping	Coping	FEKB (German language)	pre-treatment, post-treatment, 6-mo f/u, 12-mo f/u
		Emotional Functioning	Depression	Depressivitäts-Skala	pre-treatment, post-treatment, 6-mo f/u, 12-mo f/u
		Pain	pain intensity	VAS	pre-treatment, post-treatment, 6-mo f/u, 12-mo f/u
		Pharmacoeconomic/healthcare use	Use of health care system	Physician visits and physical treatments in the 12 months before and after treatment	pre, post
		Physical Functioning	Disability	PDI	pre-treatment, post-treatment, 6-mo f/u, 12-mo f/u
			physical performance	flexion and extension, as measured by PT and physician	pre-treatment, post-treatment, 6-mo f/u, 12-mo f/u
Mayer 1998 ⁷⁵	discectomy, fusion, discectomy control, fusion control	Role functioning	Work status	back to work ratio	12-mo f/u
		Pharmacoeconomic/healthcare use	New surgery	New surgery to same area	1-yr f/u
			Seeking treatment from new provider	% of pts, number of visits	1-yr f/u
		Role functioning	work retention	was working within 2-wks of f/u interview	1-yr f/u

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
			work return	had returned to work anytime during f/u including short-term training	1-yr f/u
		Symptoms and adverse events	recurrent injury	injury to same area, with or without lost work time	1-yr f/u
Bendix 1998 ⁹⁷	treatment/control group	Pain	pain: back and leg	scale 0 to 10	24-mo f/u
		Pharmacoeconomic/healthcare use	contacts with health care system	count	24-mo f/u
		Physical Functioning	function	15 questions about back problem interference with ADLs (Low back pain rating scale)	24-mo f/u
			physical activity	"are you participating in any kind of physical sports activity?"	24-mo f/u
		Role functioning	days of sick leave	count	24-mo f/u
			Work readiness	working, unemployed but actively seeking work/rehabilitation-paid work/education, on long term sick leave, pension application pending, pension obtained	before treatment, 24-mo f/u
Burns 1998 ¹⁰⁴	changes in cognitive and physical capacity pre- and post-treatment	Emotional Functioning	Pain Helplessness	Arthritis Helplessness Index adapted by replacing "Arthritis" with "Pain" in questions	1 week before treatment, at discharge, 3-6 mo f/u
		Pain	Pain severity	Pain Severity subscale of MPI	pretreatment, post-treatment, 3-6 mo f/u
		Physical Functioning	Activity levels	MPI	pretreatment, post-treatment, 3-6 mo f/u
			hours of downtime	self-reported number of hours of a typical day pts had to lie down or sit because of pain	pre-treatment, 3-6 mo f/u
			Lifting capacity	Progressive Isoinertial Lifting Evaluation (PILE)	pre-treatment, post-treatment
			Walking endurance	treadmill test	pre-treatment, post-treatment
Bendix 1998 ⁹⁵	treatment/control group, dropouts	Pain	pain: back and leg	scale 0 to 10	before treatment, 60-mo f/u
		Pharmacoeconomic/healthcare use	contacts with health care system	count	60-mo f/u
			prescription medications	scored based on type of meds and frequency of use	60-mo f/u
		Physical Functioning	function	15 questions about back problem interference with ADLs (Low back pain rating scale)	before treatment, 60-mo f/u

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
			physical activity	"are you participating in any kind of physical sports activity?", days of sport activity per week	before treatment, 60-mo f/u
			Quality of Life	5-pt scale: better or worse in relation to low-back pain	60-mo f/u
		Role functioning	days of sick leave	count	60-mo f/u
			Work readiness	working, unemployed but actively seeking work/rehabilitation-paid work/education, on long term sick leave, pension	before treatment, 60-mo f/u
Jensen 1998 ¹⁵⁷	treatment vs. control	Coping	pain coping ability	questionnaire	18-mo f/u
		Interpersonal Functioning	personal life (relationships, friends, lifestyle, etc.)	questionnaire	18-mo f/u
		Pain	pain intensity	VAS, recorded 3 times per day for 7 days	pre-treatment, post-treatment, 6-mo f/u, 18-mo f/u
		Role functioning	absenteeism	leave of absence details from National Health Insurance authority for 1 year before treatment and 18 months after	(blank)
			work situation (changed workplace, changed work task, etc.)	questionnaire	18-mo f/u
Bendix 1998 ⁹⁶	many pre-treatment variables, plus treatment groups	Pain	change in leg and back pain severity	severity of pain rated 0 to 10	before treatment, 12-mo f/u
		Participant disposition	completion vs. withdrawal from treatment	(blank)	(blank)
		Participant ratings of global improvement and satisfaction with treatment	Subjective overall assessment of back problems	5 pt scale: much worse to much better compared to before treatment	12-mo f/u
		Physical Functioning	change in level of ADLs	15 questions about back problem interference with ADLs (Low back pain rating scale)? [not specified]	before treatment, 12-mo f/u

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		Role functioning	ability to work	working or looking for work/education, disability pension status, etc.	12-mo f/u
Burns 1998 ¹⁰³	Anger management style as measured by Anger Expression Inventory; gender	Emotional Functioning	Depression	BDI	pre- and post-treatment
		Pain	Pain severity	Pain Severity subscale of MPI	pre- and post-treatment
		Physical Functioning	Activity levels	MPI	pre- and post-treatment
			Lifting capacity	Progressive Isoinertial Lifting Evaluation (PILE)	pre-treatment, post-treatment
			Walking endurance	treadmill test	pre-treatment, post-treatment
Turk 1998 ¹²	scores on MPI pain, activity, solicitous responses; CES-D, ODI, and whether onset was idiopathic were reported against response vs. non-response to treatment	Emotional Functioning	Depression	CES-D	pretreatment, post-treatment, six-month follow-up
		Interpersonal Functioning	marital satisfaction	Locke-Wallace Marital Adjustment Scale (LWMAS)	pretreatment, post-treatment
		Pain Emotional Functioning	Pain severity, perceived interference, affective distress, perceived control over life, support from significant others, responses from significant others, performance of a set of common activities	Multidimensional Pain Inventory	pretreatment, post-treatment, six-month follow-up

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		Physical Functioning	Disability	Oswestry Disability Index (ODI)	pretreatment, post-treatment, six-month follow-up
			Health status	Fibromyalgia Impact Questionnaire (FIQ)	pretreatment, post-treatment, six-month follow-up
Luoto 1998 ¹⁷⁴	outcome (good vs. poor) compared to control group; sex; initial postural stability for severe LBP vs. moderate LBP vs. control	Neuropsychological assessments of cognitive and motor function	externally disturbed postural control	measured with a vertical force platform, looking at change in center of body mass over 15 seconds when patient was standing still; also measured with vibration stimulation of muscles and with eyes open and closed	beginning of treatment, 6-mo f/u
		Physical Functioning	Rehab outcome	ODI: restoration considered effective if Oswestry index decreased after treatment	before treatment, 6-mo f/u
Guck 1999 ⁸⁰	PAIRS scores	Emotional Functioning	Changes in pain beliefs	Pain and Impairment Relationship Scale (PAIRS)	beginning of treatment, end of treatment, 6-mo f/u
			Depression	BDI	beginning of treatment, 6-mo f/u
		Pain Emotional Functioning	Pain severity, interference, and life control	MPI	beginning of treatment, 6-mo f/u
		Pharmacoeconomic/h ealthcare use	health care use	Health care visits per month due to chronic nonmalignant pain after treatment; hospitalizations due to chronic nonmalignant pain after treatment	6-mo f/u
			Medication use	Medication Quantification Scale (MQS)	beginning of treatment, 6-mo f/u
Wright 1999 ²³⁷	Cervical Spine vs. Lumbar Spine Disorder	Litigation and claims	Persistent \$ dispute	ongoing financial disputes or litigation related to the injury	1-yr f/u
		Pharmacoeconomic/h ealthcare use	New surgery	New surgery to same area	1-yr f/u
			Seeking treatment from new provider	% of pts, number of visits	1-yr f/u
		Role functioning	work retention	maintained employment during entire post-treatment period	1-yr f/u
			work return	any return to work	1-yr f/u

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		Symptoms and adverse events	recurrent injury	injury to same area, with or without lost work time	1-yr f/u
Vendrig 1999 ²²¹	demographic/socioeconomic data, physical measures, psychological measures	Emotional Functioning	somatic distress and depression	MMPI-2	pre-treatment, 6-mo f/u
		Pain	experience of pain	pain drawing	pre-treatment, 6-mo f/u
				VAS	pre-treatment, 6-mo f/u
		Physical Functioning	Disability	QBPDS	pre-treatment, 6-mo f/u
			physical functioning	lumbar extension and flexion, cardiovascular fitness (V02 max)	pre-treatment, 6-mo f/u
		Role functioning	return to work	complete vs. incomplete	6-mo f/u
Williams 1999 ⁴⁹	randomized vs. refused randomization; treatment program by randomized vs. elective; treatment vs. waitlist; inpatient vs. outpatient	Emotional Functioning	Catastrophic thinking	Catastrophizing subscale of CSQ	(blank)
			Confidence performing activities despite pain	Pain self-efficacy questionnaire (PSEQ)	pre-treatment, post-treatment, 1-mo f/u, 12-mo f/u
			Depression	BDI	pre-treatment, post-treatment, 1-mo f/u, 12-mo f/u
		Other	Use of program coping strategies (exercise, stretch, relaxation)	frequency, self-reported	1-mo f/u, 6-mo f/u
		Pain	pain intensity	0 to 100 scale (average pain and pain distress over last week)	pre-treatment, post-treatment, 1-mo f/u, 12-mo f/u

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		Pharmacoeconomic/healthcare use	Medication use	NSAIDS, opioid analgesics, antidepressants, benzodiazepines, other	pre-treatment, post-treatment, 1-mo f/u, 12-mo f/u
		Physical Functioning	Impact of pain on day-to-day functioning	SIP (Sickness Impact Profile)	pre-treatment, post-treatment, 1-mo f/u, 12-mo f/u
			physical functioning	10-minute walk	pre-treatment, post-treatment, 1-mo f/u, 12-mo f/u
Gatchel 1999 ¹³⁹	Program completion, work retention, SF-36 change	Litigation and claims	claim settlement	settlement of pt's disability-related compensation claim	1-yr
		Pharmacoeconomic/healthcare use	new healthcare provider	% of pts seeking healthcare from a new provider, suggesting dissatisfaction with health status and disability determinations by current treating and referring doctors	1-yr
			New surgery	surgery to the original compensable injured area during the post-treatment year	1-yr
			Number of healthcare visits	0 vs. 1+ visits in year post treatment	1-yr f/u
		Physical Functioning	Health status	SF-36	pre-treatment, 1-yr f/u (only for portion of completers)
		Role functioning	return to work	any period of work during post-treatment year	1-yr f/u
			work retention	actually working within 2 weeks of outcome interview	1-yr f/u
Kole-Snijders 1999 ¹⁶⁹	controlled for biomedical status (using Medical Examination and Diagnostic Information Coding System MEDICS); psychopathology; Age	Emotional Functioning	Negative affect	BDI	pre-treatment, post-treatment, 6-mo f/u, 12-mo f/u
				Fear Survey Schedule (FSS-III-R)	pre-treatment, post-treatment, 6-mo f/u, 12-mo f/u

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
			Pain Behavior	Checklist for Interpersonal Pain Behavior (CHIP)	pre-treatment, post-treatment, 6-mo f/u, 12-mo f/u
				Pain Behavior Scale (PBS)	pre-treatment, post-treatment, 6-mo f/u, 12-mo f/u
			Pain cognitions	CSQ	pre-treatment, post-treatment, 6-mo f/u, 12-mo f/u
				Multidimensional Pain Locus of Control Questionnaire (MPLC)	pre-treatment, post-treatment, 6-mo f/u, 12-mo f/u
				PCL	pre-treatment, post-treatment, 6-mo f/u, 12-mo f/u
			Somatic anxiety	Nijmegen Hyperventilation Questionnaire	pre-treatment, post-treatment, 6-mo f/u, 12-mo f/u
		Pain	pain intensity	MPQ	pre-treatment, post-treatment, 6-mo f/u, 12-mo f/u
				VAS	pre-treatment, post-treatment, 6-mo f/u, 12-mo f/u
		Physical Functioning	Activity tolerance	Behavioral Approach Tests of walking and riding a bicycle up to preset maximum time	pre-treatment, post-treatment, 6-mo f/u, 12-mo f/u
Vendrig 2000 ²²³	none reported	Emotional Functioning	somatic symptoms, distress, depression, etc.	MMPI	before treatment, post-treatment, 6-mo f/u
		Pain	pain intensity and location	pain drawing	before treatment, 6-mo f/u
				VAS	before treatment, 6-mo f/u
		Pharmacoeconomic/healthcare use	meds and treatment	use of analgesics, medical or paramedical treatment for symptoms of whiplash associated disorder	6-mo f/u
		Physical Functioning	Self-reported Disability	Quebec Back Pain Disability Scale	before treatment, post-treatment, 6-mo f/u
		Role functioning	return to work	(blank)	6-mo f/u

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing	
Burns 2000 ¹⁰²	Trait anxiety assessed with Anxiety Content Scale of MMPI-2, defensiveness assessed with Lie scale of MMPI-2	Emotional Functioning	Depression	BDI	pre- and post-treatment	
		Pain	Pain severity	Pain Severity subscale of MPI	pre- and post-treatment	
		Physical Functioning	Activity levels	MPI	pre- and post-treatment	
			Lifting capacity	Progressive Isoinertial Lifting Evaluation (PILE)	pre-treatment, post-treatment	
			Walking endurance	treadmill test	pre-treatment, post-treatment	
Chapman 2000 ⁵⁰	Patient ratings of treatment helpfulness correlated with treatment cost	Pharmacoeconomic/h ealthcare use	Treatment costs	provided for all three centers	(blank)	
Vendrig 2000 ²²²	MMPI-2 scales; controlled for patient age, education, duration of pain	Emotional Functioning	Fear of movement	Isostation B200 (triaxial dynamometer) to measure maximal isometric extension	2 wks prior to treatment, during treatment, at 6-month follow-up	
		Pain	pain intensity	Visual Analogue Scale	2 wks prior to treatment, during treatment, at 6-month follow-up	
			Satisfaction with Treatment	Clinical Satisfaction Questionnaire	6-month follow-up	
			Self-rated emotional change	5-pt Likert scale from "no emotional change" to "considerable emotional change"	6-month follow up	
		Physical Functioning	Self-reported Disability	Quebec Back Pain Disability Scale	2 wks prior to treatment, during treatment, at 6-month follow-up	
			Participant ratings of global improvement and satisfaction with treatment			

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
Bendix 2000 ⁷⁸	treatment group, drop-outs	Role Functioning Pharmaco-economic/h ealthcare use	"Normal functioning"	Return to work, no use of analgesics to reduce pain symptoms, no medical or paramedical treatment for back pain	6-month follow-up
		Pain	leg and back pain severity	severity of pain rated 0 to 10	before treatment, 12-mo f/u
		Participant ratings of global improvement and satisfaction with treatment	Subjective overall assessment of back problems	5 pt scale: much worse to much better compared to before treatment	12-mo f/u
		Pharmaco-economic/h ealthcare use	contacts with health care system	count	before treatment, 12-mo f/u
		Physical Functioning	ADLs	15 questions about back problem interference with ADLs (Manniches Rating Scale: same as Low Back Rating Scale)	before treatment, 12-mo f/u
Sternier 2001 ²¹³	0	Role functioning	ability to work	working or looking for work/education, disability pension status, etc.	before treatment, 12-mo f/u
			days of sick leave	count	before treatment, 12-mo f/u
		Coping	Coping	Coping Resource Index	Before treatment, after treatment, at 6-month follow-up
		Emotional Functioning	Depression	Beck Depression Index	Before treatment, after treatment, at 6-month follow-up
			Life Satisfaction	Life Satisfaction Questionnaire	Before treatment, after treatment, at 6-month follow-up
			Pain aspects, behavioural responses, activities	Multidimensional Pain Inventory	Before treatment, after treatment, at 6-month follow-up
		Pain	pain intensity	VAS	Before treatment, after treatment, at 6-month follow-up
	Participant ratings of global improvement and satisfaction with treatment	Evaluation of effects of treatment	Questionnaire including pt comparison of aspects of pain and symptoms before and after treatment, satisfaction with program, some patients' medical records were checked for stress reactions and crisis disorders (e.g., PTSD)	after treatment, 6-month follow-up	

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		Role functioning	sick leave	working at least 50% time	Before treatment, after treatment, at 6-month follow-up
Mayer 2001 ¹⁸¹	age (5 groups: <25 yrs, 25-34, 35-44, 45-54, 55+)	Litigation and claims	case settlement	yes/no	1-yr f/u
		Pharmacoeconomic/h ealthcare use	New surgery	New surgery to same area	1-yr f/u
			Seeking treatment from new provider	% of pts, number of visits	1-yr f/u
		Role functioning	work retention	was working within 2-wks of f/u interview	1-yr f/u
			work return	any return to work, also noted whether permanent modification of work, and whether with same employer	1-yr f/u
		Symptoms and adverse events	recurrent injury	injury to same area, with or without lost work time	1-yr f/u
Jensen 2001 ¹⁶⁰	change in pain beliefs (Survey of Pain Attitudes), change in catastrophizing (CSQ catastrophizing scale), change in coping (Chronic Pain Coping Inventory); pain site, pre-treatment pain, employment status, pain duration,	Emotional Functioning	Depression	CES-D	pre-treatment, after treatment, 6-mo f/u, 12-mo f/u
		Pain	pain intensity	average, least, and worst pain intensity over past week	pre-treatment, after treatment, 6-mo f/u, 12-mo f/u
		Pharmacoeconomic/h ealthcare use	health care use	number of pain-related visits made to physicians during prior 3 months	pre-treatment, 6-mo f/u, 12-mo f/u
		Physical Functioning	physical functioning	Roland Scale: both self-rated and as rated by patient's significant other	pre-treatment, after treatment, 6-mo f/u, 12-mo f/u

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
Skouen 2002 ²⁰⁸	treatment and control groups; gender	Pharmacoeconomic/h ealthcare use	costs	economic returns for society from treatment at the clinic vs. treatment as usual	(blank)
		Role functioning	return to work	National Health Insurance data on payments of sickness benefits, rehab benefits, or disability pension (absence of benefits = return to work)	monthly for 26 months after treatment
Vines 2000 ²²⁵	none reported	Biological markers	immune function	changes in T lymphocyte proliferation after stimulation with Concanavalin A and Phytohemagglutinin; NK cell activity	baseline, week 4 of treatment
		Emotional Functioning	Depression	BDI	baseline, week 4 of treatment
		Pain	Pain intensity and affect	SF-MPQ	baseline, week 4 of treatment
		Physical Functioning	Health behaviors (e.g., exercise, nutrition, relaxation)	Personal Lifestyle Activities Questionnaire (PLQ)	baseline, week 4 of treatment
Walsh 2002 ²³¹	correlations with outcome variables calculated for: PBQ Organic Pain Belief scale and PBQ Psychological Pain Belief scale	Emotional Functioning	Pain beliefs	Pain Beliefs Questionnaire (PBQ)	pre-treatment, post-treatment, 3-mo f/u
		Physical Functioning	Disability	Oswestry Low Back Pain Disability Questionnaire	pre-treatment, post-treatment, 3-mo f/u (except Oswestry, which was offered only to a subset of pts and only at pre-treatment assessment)
				Roland and Morris Disability Questionnaire (RMDQ)	pre-treatment, post-treatment, 3-mo f/u (except Oswestry, which was offered only to a subset of pts and only at pre-treatment assessment)

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
				SF-36	pre-treatment, post-treatment, 3-mo f/u (except Oswestry, which was offered only to a subset of pts and only at pre-treatment assessment)
Gatchel 2002 ¹⁴⁰	Coping style	Coping	Coping styles	Multidimensional Pain Inventory (MPI)	pre-treatment, post-treatment
		Emotional Functioning	Depression	Beck Depression Inventory (BDI)	pre-treatment, post-treatment
		Emotional Functioning Physical Functioning	Self-report mental and physical functioning	Medical Outcomes Short Form-36 Health-Status Survey (SF-36)	pre-treatment, post-treatment,
		Pain	Pain	Pain Drawing Visual Analog (VAS)	pre-treatment, post-treatment
		Pharmacoeconomic/healthcare use	Medication usage	use of opiates, antidepressants, benzodiazepines	pre-treatment, post-treatment
		Physical Functioning	Perceived functional disabilities caused by pain	Owestry Pain Disability Questionnaire	pre-treatment, post-treatment
			Perceived pain and disability	Dallas Pain and Disability Questionnaire (DPDQ)	pre-treatment, post-treatment
Gustafsson 2002 ¹³	treatment vs. control	Emotional Functioning Physical Functioning	Psychological, social, and behavioral aspects of pain	MPI	before treatment, after treatment, 3-mo f/u, 12-mo f/u
		Pain	pain intensity and location	pain drawing	before treatment, after treatment, 3-mo f/u, 12-mo f/u
				VAS	before treatment, after treatment, 3-mo f/u, 12-mo f/u
		Physical Functioning	Qualities of movement in patients with psychosomatic or psychiatric symptoms	Body Awareness Scale-Health (BAS-H)	before treatment, after treatment, 3-mo f/u, 12-mo f/u

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
			Quality of Life	Quality of Life Scale (QLS)	before treatment, after treatment, 3-mo f/u, 12-mo f/u
Burns 2003 ¹⁰⁶	changes over course of treatment	Emotional Functioning	Depression	BDI	pre-treatment, mid-treatment, post-treatment
			pain catastrophizing	Coping Strategies Questionnaire Catastrophizing subscale	pre-treatment, mid-treatment, post-treatment
			Pain Helplessness	Arthritis Helplessness Index adapted by replacing "Arthritis" with "Pain" in questions	pre-treatment, mid-treatment, post-treatment
		Pain Emotional Functioning	Pain severity, interference in daily functioning attributed to pain and ability to engage in everyday activities	MPI	pre-treatment, mid-treatment, post-treatment
Bailey 2003 ⁹⁴	physical and sexual abuse history; sex	Emotional Functioning	Anxiety	Beck Anxiety Inventory (BAI)	Intake, discharge, 6-mo f/u, 12-mo f/u
			Depression	BDI	Intake, discharge, 6-mo f/u, 12-mo f/u
		Pain	Pain	MPI	Intake, discharge, 6-mo f/u, 12-mo f/u
		Pharmacoeconomic/healthcare use	Healthcare use	4 self-report questions (health care visits, hospitalizations, surgeries, emergency room visits)	Intake, 6-mo f/u, 12-mo f/u
		Role functioning	Work status	self-report	Intake, 6-mo f/u, 12-mo f/u
Turner-Stokes 2003 ⁷⁶	none	Emotional Functioning	Depression	BDI	baseline, post-treatment, 6-mo f/u, 12-mo f/u
			State anxiety	Speilberger State-Trait Anxiety Inventory (STAI)	baseline, post-treatment, 6-mo f/u, 12-mo f/u
		Pharmacoeconomic/healthcare use	analgesic medication consumption	self-reported number of pain killer and anti-inflammatory tablets consumed weekly	baseline, post-treatment, 6-mo f/u, 12-mo f/u
		Physical Functioning	interference of pain with daily activities;	WHYMPI	baseline, post-treatment, 3-mo f/u,

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
			sense of control over pain; physical and social activity inside and outside the home, pain severity		6-mo f/u, 12-mo f/u
Robbins 2003 ³⁸	dropouts vs. completers; none others reported	Coping	Coping styles	Multidimensional Pain Inventory (MPI)	pre-treatment, post-treatment, 1-year follow-up
		Emotional Functioning	Depression	Beck Depression Inventory (BDI)	pre-treatment, post-treatment, 1-year follow-up
		Emotional Functioning Physical Functioning	Self-report mental and physical functioning	Medical Outcomes Short Form-36 Health-Status Survey	pre-treatment, post-treatment, 1-year follow-up
		Pain	Pain	Pain Drawing Visual Analog (VAS)	pre-treatment, post-treatment, 1-year follow-up
		Pharmacoeconomic/h ealthcare use	health care use	health care visits and emergency room visits	number of visits during 1-yr f/u period
			Medication usage	use of opiates, antidepressants, benzodiazepines	pre-treatment, one-year follow-up
		Physical Functioning	Perceived functional disabilities caused by pain	Owestry Pain Disability Questionnaire	pre-treatment, post-treatment, 1-year follow-up
			Perceived pain and disability	Dallas Pain Questionnaire (DPQ)	pre-treatment, post-treatment, 1-year follow-up
		Role functioning	vocational status	currently working, no work due to original injury, no work for other reason	pre-treatment, one-year follow-up
Jensen 2003 ¹⁴	change in Pain Stages of Change Questionnaire (PSOCQ), clinic (UW and FM); controlled for pre-treatment pain severity	Coping	Pain coping	Chronic Pain Coping Inventory (CPCI)	pre-treatment, post-treatment, f/u (1 mo f/u for FM sample, 6 mos for UW)
		Emotional Functioning	Depression	CES-D	pre-treatment, post-treatment, f/u (1 mo

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		Pain	Pain severity	average, worst, least pain intensity on 0-10 scale	f/u for FM sample, 6 mos for UW) pre-treatment, post-treatment, f/u (1 mo f/u for FM sample, 6 mos for UW)
				WHYMPI	pre-treatment, post-treatment, f/u (1 mo f/u for FM sample, 6 mos for UW)
		Physical Functioning	Physical disability and activity interference	Roland-Morris Disability Questionnaire (RMDQ)	pre-treatment, post-treatment, f/u (1 mo f/u for FM sample, 6 mos for UW)
				WHYMPI	pre-treatment, post-treatment, f/u (1 mo f/u for FM sample, 6 mos for UW)
Ciechanowski 2003 ¹¹³	Attachment style using Relationship Scale Questionnaire (RSQ); gender and age included in some models	Emotional Functioning	catastrophizing	Coping Strategies Questionnaire (CSQ-C)	pre-treatment, 12-mo f/u
			Depression	CES-D	pre-treatment, 12-mo f/u
		Pain	pain intensity	average, least, and worst pain intensity over past week	pre-treatment, 12-mo f/u
		Pharmacoeconomic/healthcare use	health care use	number of pain-related visits made to physicians during prior 3 months	pre-treatment, 12-mo f/u
		Physical Functioning	physical functioning	Roland Scale: self-rated	pre-treatment, 12-mo f/u
Burns 2003 ¹⁰⁵	changes in outcome measures	Emotional Functioning	Depression	BDI	pre-treatment, mid-treatment, post-treatment
			pain catastrophizing	Pain Catastrophizing scale (PCS)	pre-treatment, mid-treatment, post-treatment

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
			Pain Helplessness	Arthritis Helplessness Index adapted by replacing "Arthritis" with "Pain" in questions	pre-treatment, mid-treatment, post-treatment
			Pain-related anxiety and fear	Pain Anxiety Symptoms Scale short form (PASS-20)	pre-treatment, mid-treatment, post-treatment
		Pain Emotional Functioning	Pain severity, interference in daily functioning attributed to pain and ability to engage in everyday activities	MPI	pre-treatment, mid-treatment, post-treatment
Evans 2001 ¹²⁸	Recurrent injury vs. non-recurrent injury	Litigation and claims	claim settlement	settlement of pt's disability-related compensation claim	1-yr
		Pharmaco-economic/h ealthcare use	new healthcare provider	% of pts seeking healthcare from a new provider, suggesting dissatisfaction with health status and disability determinations by current treating and referring doctors	1-yr
			New surgery	surgery to the original compensable injured area during the post-treatment year	1-yr
		Physical Functioning	new injury	new injury claim to the original compensable injured area resulting in lost time from work	1-yr
		Role functioning	return to work	any period of work during post-treatment year; also measured months worked since treatment	1-yr f/u
			work retention	employed at time of 1-yr f/u	1-yr f/u
Lang 2003 ¹⁷¹	none reported	Emotional Functioning	Depression	Allgemeine Depressionsskala	pre-treatment, 6-mo f/u
		Pain	Pain intensity and interference with function	Brief Pain Inventory	pre-treatment, 6-mo f/u
		Participant ratings of global improvement and satisfaction with treatment	"How do you estimate the restriction in your whole life situation due to pain as compared to the time before the beginning of the study?"	better, unchanged, or worse	6-mo f/u

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
Mayer 2002 ¹⁸⁶	cervical fusion status (yes/no)	Physical Functioning	Health-related Quality of Life	SF-36	pre-treatment, 6-mo f/u
		Role functioning	days off from work in the last 3 months	self-reported	pre-treatment, 6-mo f/u
		Litigation and claims	case settlement	yes/no	1-yr f/u
		Pharmacoeconomic/h ealthcare use	New surgery	New surgery to same area	1-yr f/u
			Seeking treatment from new provider	% of pts, number of visits	1-yr f/u
		Role functioning	work retention	was working within 2-wks of f/u interview	1-yr f/u
			work return	any return to work, also noted whether permanent modification of work, and whether with same employer	1-yr f/u
Glenn 2003 ¹⁴³	changes over course of treatment	Symptoms and adverse events	recurrent injury	injury to same area, with or without lost work time	1-yr f/u
		Emotional Functioning	Depression	BDI	pre-treatment, mid-treatment, post-treatment
			Pain self-management stage of change	PSOCQ	pre-treatment, mid-treatment, post-treatment
		Pain Emotional Functioning	Pain severity, interference in daily functioning attributed to pain and ability to engage in everyday activities	MPI	pre-treatment, mid-treatment, post-treatment
Currie 2003 ¹⁵	none reported	Emotional Functioning	Self-management	Self-Control Scale (SCS)	pre-treatment, post-treatment, 3-mo f/u, 12-mo f/u
		Other	Addiction	Addiction Severity Indices (includes employment--days with employment problems)	pre-treatment, post-treatment, 3-mo f/u, 12-mo f/u
		Pain	Pain severity and quality	MPQ-PRI	pre-treatment, post-treatment, 3-mo f/u, 12-mo f/u
		Pharmacoeconomic/h ealthcare use	Medication	MQS	pre-treatment, post-treatment, 3-mo f/u, 12-mo f/u

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		Physical Functioning	psychosocial impact of pain	MPI	pre-treatment, post-treatment, 3-mo f/u, 12-mo f/u
Edwards 2003 ¹²⁴	Pre-treatment Ischemic Pain Tolerance; Experimental pain response to assess behavioral responses to a standardized noxious stimulus; sex; pre-treatment MPI scales	Pain Emotional Functioning	Pain severity, interference, general activity, affective distress	MPI	before and after treatment program
Walsh 2004 ²³²	None reported	Emotional Functioning	Self Efficacy on 10 classes of activity (household, leisure, work, etc.)	Self Efficacy Questionnaire	baseline, after treatment, 9 months post-treatment
		Physical Functioning	Disability	Roland and Morris Disability Questionnaire	baseline, after treatment, 9 months post-treatment
			Walking performance	5-Minute Walk Test	baseline, after treatment, 9 months post-treatment
		Role functioning	Occupational Performance	Canadian Occupational Performance Measure--reported difficulties in occupational performance and satisfaction with performance	baseline, after treatment, 9 months post-treatment
Proctor 2004 ²⁰⁰	whether pt had received treatment for the injury from a new provider in the year post-treatment; number of visits	Litigation and claims	case settlement	% reporting	1-yr f/u
		Pharmacoeconomic/h ealthcare use	new surgery in original area of injury	% reporting	1-yr f/u
		Physical Functioning	new injury claim after return to work	% reporting	1-yr f/u
		Role functioning	pt still working	% reporting	1-yr f/u

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
Olason 2004 ¹⁹⁶	none reported	Emotional Functioning	return to work Anxiety/depression	% reporting numeric rating scale (self-estimated)	1-yr f/u admission, discharge, 1-yr f/u
		Pain	Pain	numeric rating scale (self-estimated)	admission, discharge, 1-yr f/u
		Pharmacoeconomic/healthcare use	analgesic meds use	opioids, NSAIDs, anti-depressants	admission, discharge, 1-yr f/u
		Role functioning	Work status	working, receiving disability benefits	admission, discharge, 1-yr f/u, 3 to 6-yr f/u
Koopman 2004 ¹⁷⁰	trunk flexibility, sex, age, functional disability, reinterpretation of pain sensations	Coping	Coping styles: catastrophizing, perceived pain control, denial of pain, positive self approach, reinterpretation of pain sensations, praying and hoping, distracting attention, becoming more active	CSQ	baseline, 12 weeks after admission, 1-yr follow-up
		Emotional Functioning	Symptoms: depression, generalized fear, psychoneuroticism	SCL-90	baseline, 12 weeks after admission, 1-yr follow-up
		Physical Functioning	Functional disability	Quebec Back Pain Disability Scale	baseline, 12 weeks after admission, 1-yr follow-up
			Physical Function	muscular strength, cardiovascular fitness, trunk flexibility	baseline, 12 weeks after admission, 1-yr follow-up
		Role functioning	return to work	hours of work per week; percentage work of appointment (i.e., depending on whether it was initially a full-time job or a part-time job), work status (includes return to old job without adaptations, return to old job with temporary or permanent adaptations)	baseline, 12 weeks after admission, 6 mos after discharge, 1-yr follow-up
Cedraschi 2004 ¹⁶	Participants vs. control groups	Clinician or surrogate ratings of global improvement	Physician evaluation of pain	Tender points, myalgic score, total physician score	baseline, 6-mo f/u

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		Participant ratings of global improvement and satisfaction with treatment	Patient satisfaction	Likert scales for PT, symptom control, psychosocial factors, and information	6-mo f/u
		Physical Functioning	continuation of activity	whether pts had continued swimming pool exercises, resumed an activity they had given up, or engaged in a new activity	6-mo f/u
			functional and symptomatic consequences of FM	Fibromyalgia Impact Questionnaire	baseline, 6-mo f/u
			Quality of Life	Psychological General Well-Being index (PGWB)	baseline, 6-mo f/u
				SF-36	baseline, 6-mo f/u
Wasan 2004 ²³³	ECT vs. no ECT	Emotional Functioning	depression change	Montgomery-Asberg Depression Inventory (MA)	multiple during stay
		Pain	pain change	daily record by attending and nursing staff of patient's pain rating on 0 to 10 scale	daily during treatment
		Pharmacoeconomic/healthcare use	prescribed opioid dose	(blank)	admission/discharge
Magnusson 2004 ²⁷	MPP vs. pharma/Usual Care	Emotional Functioning Physical Functioning	physical and mental health	SF-36	pre-treatment, discharge or 1-yr post-entry
		Pain	Headache frequency	headache diary	pre-treatment, discharge or 1-yr post-entry
		Physical Functioning	Headache Disability	Headache Disability Inventory (HDI)	pre-treatment, discharge or 1-yr post-entry
Storro 2004 ²¹⁴	0	Role functioning	On sick-list	Central sick-list kept by the Local National Insurance Office	1, 3, 6, 12 months post treatment
Patrick 2004 ¹⁹⁷	age (45-54 yrs, 55-64 yrs); no reporting of original treatment/control groups	Pain	Current Pain Levels	MPQ	13 yr f/u
		Pharmacoeconomic/healthcare use	Post-treatment health use for pain	self-reported, type of provider/treatment, number of visits	13 yr f/u
		Physical Functioning	General Health Functioning	SF-36	13 yr f/u

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
			Pain interference	MPI: Interference and Negative Mood scales	13 yr f/u
		Role functioning	return to employment	Quantity (length of time as an employed worker or worker in the home since treatment); Quality (type of work done)	13 yr f/u
Spinhoven 2004 ²¹¹	catastrophizing, pain coping, internal pain control, external pain control	Emotional Functioning	Negative affect	BDI	pre-treatment, post-treatment, 12-mo f/u
				Fear Survey Schedule (FSS-III-R)	pre-treatment, post-treatment, 12-mo f/u
			Pain Behavior	Checklist for Interpersonal Pain Behavior (CHIP)	pre-treatment, post-treatment, 12-mo f/u
				Pain Behavior Scale (PBS)	pre-treatment, post-treatment, 12-mo f/u
		Pain	pain intensity	Pain Rating Index of the MPQ	pre-treatment, post-treatment, 12-mo f/u
		Physical Functioning	Activity tolerance	Behavioral Approach Tests of walking and riding a bicycle up to preset maximum time	pre-treatment, post-treatment, 12-mo f/u
Jousset 2004 ¹⁶²	treatment vs. control; difference in sick leave days post-treatment adjusted for presence of ergonomic program in workplace	Emotional Functioning	psychological profile	HADS	pre-treatment, 6-mo f/u
		Pain	pain intensity	VAS	pre-treatment, 6-mo f/u
		Pharmaco-economic/healthcare use	Medication use	use of prescription medications	pre-treatment, 6-mo f/u
			other healthcare use	number of "pain treatments"--contacts with family physician, contacts with specialists	6-mo f/u
		Physical Functioning	Pain impact on life	Dallas Pain Questionnaire	pre-treatment, 6-mo f/u
				Quebec Back Pain Disability	pre-treatment, 6-mo f/u
			physical parameters	Trunk flexibility, trunk strength, lifting capacity, endurance	pre-treatment, 6-mo f/u
		Role functioning	sick leave	number of days of sick leave taken after program completion	6-mo f/u

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
Rome 2004 ²⁰⁵	pre-treatment use of opioids (yes/no; none, low-dose, high-dose)	Emotional Functioning	Depression	Center for Epidemiological Studies-Depression Scale (CES-D)	admission, dismissal
			pain catastrophizing	Coping Strategies Questionnaire (CSQ-C)	admission, dismissal
		Pharmaco-economic/h ealthcare use	opioid use	current dose calculated from pt self-report, medical records, medication logs	admission, dismissal
		Physical Functioning	psychosocial functioning, activity levels, pain severity, pain interference with life	MPI	admission, dismissal
Vowles 2004 ²²⁷	demographics, BDI, MPQ-SF, PASS, PDI, functional capacity	Role functioning	return to work	part-time or full-time work; job retraining, education	6 months after treatment
Vollenbroek-Hutten 2004 ²²⁶	MMPI-DLV used to classify pts into dysfunctionals, interpersonally distressed, adaptive copers, average; lumbar dynamometry at baseline used to divide pts into expected, normal, and inconsistent-grey zone or inconsistent-submaximal (performance is not maximal and assessment is probably not valid)	Emotional Functioning	Kinesiophobia	Tampa Scale	baseline, after 8-weeks treatment (or no-treatment), 4-mo later
			Psychological dysfunction	SCL-90	baseline, after 8-weeks treatment (or no-treatment), 4-mo later

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		Physical Functioning	Disability	Roland Disability Questionnaire (RDQ)	baseline, after 8-weeks treatment (or no-treatment), 4-mo later
			Health-related Quality of Life	EuroQol (EQ5-D)	baseline, after 8-weeks treatment (or no-treatment), 4-mo later
			Physical condition	Astrand VO2 max, leg strength	baseline, after 8-weeks treatment (or no-treatment), 4-mo later
Kenny 2004 ¹⁶⁴	singing vs. listening to music vs. didn't attend singing	Emotional Functioning	Depression	Zung Depression Inventory	pre- and post-program, 6-mo f/u
			mood	Profile of Mood States	pre- and post-program
			pain-related cognitions	Pain Responses Self-Statements: catastrophizing scale, active coping scale	pre- and post-program, 6-mo f/u
			Patient belief in ability to engage in tasks despite pain	Pain Self-Efficacy Questionnaire	pre- and post-program, 6-mo f/u
		Physical Functioning	Quality of Life, Pain tolerance	Oswestry Low Back Pain Disability Questionnaire	pre- and post-program, 6-mo f/u
Jensen 2004 ¹⁷	change in Pain Stages of Change Questionnaire (PSOCQ), clinic (UW and FM); controlled for pre-treatment pain severity	Coping	Pain coping	Chronic Pain Coping Inventory (CPCI)	pre-treatment, post-treatment, 6-mo f/u
		Emotional Functioning	Depression	CES-D	pre-treatment, post-treatment, 6-mo f/u
		Pain	Pain severity	average, worst, least pain intensity on 0-10 scale	pre-treatment, post-treatment, 6-mo f/u
				WHYMPI	pre-treatment, post-treatment, 6-mo f/u

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		Physical Functioning	Physical disability and activity interference	Roland-Morris Disability Questionnaire (RMDQ)	pre-treatment, post-treatment, 6-mo f/u
				WHYMPI	pre-treatment, post-treatment, 6-mo f/u
Protas 2004 ²⁰²	cervical vs. lumbar spine disorder; valid vs. invalid scores on pre-rehab aerobic capacity test (e.g., not strong enough to complete the test)	Emotional Functioning	psychosocial	BDI	intake, discharge, pain intensity also recorded at 1-yr f/u
				MVAS	intake, discharge, pain intensity also recorded at 1-yr f/u
		Litigation and claims	case settlement	% reporting	1-yr f/u
		Pain	psychosocial	pain intensity	intake, discharge, pain intensity also recorded at 1-yr f/u
		Pharmacoeconomic/healthcare use	health utilization (new provider)	seeing new provider for same issue	1-yr f/u
			new surgery to treated area	% reporting	1-yr f/u
		Physical Functioning	aerobic capacity	variety (heart rate, watts, predicted max VO2, perceived exertion)	intake, discharge
		Role functioning	return to work	any work during f/u	1-yr f/u
			work retention	"remained working" at time of f/u	1-yr f/u
		Symptoms and adverse events	recurrent injury	% reporting	1-yr f/u
Dysvik 2004 ¹²²	none reported	Coping	Coping Strategies	Ways of Coping Checklist (WCCL)	pre-treatment, post-treatment
		Pain	pain intensity	VAS	pre-treatment, post-treatment
		Physical Functioning	Health related quality of life	SF-36	pre-treatment, post-treatment
			Quality of life now and in 5 years	Cantril's ladder	pre-treatment, post-treatment

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
Michaelson 2004 ¹⁸⁹	prediction of pain reduction using initial variables including MPI pain severity and affective distress, optimism, sociability, physical endurance, age, etc.; presented separately for pain location (neck vs. low-back)	Pain	average pain intensity over past week	VAS	pretreatment, post treatment, 12-mo f/u
Gross 2005 ¹⁴⁴	year of treatment (1999 vs. 2000); pre-admission health visits; months between injury and admission to rehab, previous back claims; adjusted for gender, diagnosis, duration of injury, physical demands rating, VAS, PDI, etc.	Role functioning	Recovery	time to claim closure following admission to rehab	(blank)
			return to work	days receiving time-loss benefits following admission to the rehab program	(blank)
		Symptoms and adverse events	Recurrence	claim reopened, new back-related claim filed, subject restarted time-loss benefits	1-yr f/u
Norrefalk 2005 ¹⁹²	Return to work prediction based on IDEA, pre-treatment pain intensity, somatic value of pain,	Role functioning	Return to work, hours worked per day	reported by local social insurance office	1-yr f/u

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing	
Keogh 2005 ¹⁶⁵	disability rating index, etc. sex; pain, distress, catastrophizing	Emotional Functioning	Acceptance	Chronic Pain Acceptance Questionnaire (CPAQ)	pre-treatment, post-treatment, 3-mo f/u	
			Emotional distress	BDI	pre-treatment, post-treatment, 3-mo f/u	
				Pain-related distress over past week	pre-treatment, post-treatment, 3-mo f/u	
				PASS	pre-treatment, post-treatment, 3-mo f/u	
				PCS	pre-treatment, post-treatment, 3-mo f/u	
			Pain	subjective pain	current intensity, usual intensity over past week	pre-treatment, post-treatment, 3-mo f/u
			Physical Functioning	Disability	Sickness Impact Profile (SIP)	pre-treatment, post-treatment, 3-mo f/u
				pain-related behaviors	medication use, rest hours during day, hours slept at night	pre-treatment, post-treatment, 3-mo f/u
				physical performance	10-minute walk; sit-to-stand trial (repetitions)	pre-treatment, post-treatment, 3-mo f/u
					sit-to-stand trial (repetitions)	pre-treatment, post-treatment, 3-mo f/u
Gatchel 2005 ¹⁴¹	8 categories for marital status, sex, children/no children; age	Litigation and claims	claim settlement	settlement of pt's disability-related compensation claim	1-yr	
			Pharmacoeconomic/healthcare use	new healthcare provider	% of pts seeking healthcare from a new provider, suggesting dissatisfaction with health status and disability determinations by current treating and referring doctors	1-yr
				New surgery	surgery to the original compensable injured area during the post-treatment year	1-yr
			Role functioning	return to work	any period of work during post-treatment year	1-yr f/u
				Work days lost	% yes	1-yr f/u
		work retention	actually working within 2 weeks of outcome interview	1-yr f/u		
Burns 2005 ¹⁰⁷	changes over course of treatment	Emotional Functioning	Depression	BDI	pre-treatment, mid-treatment, post-treatment	

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
			Pain self-management stage of change	PSOCQ	pre-treatment, mid-treatment, post-treatment
		Pain Emotional Functioning	Pain severity, interference in daily functioning attributed to pain and ability to engage in everyday activities	MPI	pre-treatment, mid-treatment, post-treatment
Fishbain 2005 ¹³⁰	pre-treatment scores on Neuropathic Pain Scale and Beck Depression Inventory, demographic information, primary and secondary pain diagnoses, DSM-IV psychiatric diagnoses, pain location, prior surgeries, sex	Physical Functioning	Pain-associated Fatigue	Multidimensional Fatigue Inventory (MFI)	before and after treatment
Proctor 2005 ²⁰¹	treatment completers vs. non-completers	Litigation and claims	case settlement	% reporting	1-yr f/u
		Pharmacoeconomic/healthcare use	health utilization (new provider)	%; also, number of visits	1-yr f/u
			New surgery to compensable area	% reporting	1-yr f/u
		Role functioning	hours working per week	% working full-time, 20-39 hrs per week, less than 20 hrs per week	1-yr f/u
			work retention at 1-yr	%	1-yr f/u
			work return	%; also recorded whether returned to same employer, returned to identical job	1-yr f/u
		Symptoms and adverse events	recurrent injury with lost work days	% reporting	1-yr f/u

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing	
McCracken 2005 ¹⁸⁸	correlations with outcome variables calculated for: activity engagement, pain willingness, total acceptance	Emotional Functioning	Acceptance	Chronic Pain Acceptance Questionnaire (CPAQ)	assessment, pre-treatment, post-treatment, 3-mo f/u	
			Emotional distress	BDI	assessment, pre-treatment, post-treatment, 3-mo f/u	
				PASS	assessment, pre-treatment, post-treatment, 3-mo f/u	
					PCS	assessment, pre-treatment, post-treatment, 3-mo f/u
		Pain	subjective pain	current intensity, usual, lowest intensity over past week	assessment, pre-treatment, post-treatment, 3-mo f/u	
		Pharmacoeconomic/healthcare use	GP Visits	count over past 6 months	assessment, 3-mo f/u	
		Physical Functioning	Disability	Sickness Impact Profile (SIP)	assessment, pre-treatment, post-treatment, 3-mo f/u	
			pain-related behaviors	medication use, rest hours during day, hours slept at night	assessment, pre-treatment, post-treatment, 3-mo f/u	
			physical performance	10-minute walk; sit-to-stand trial (repetitions)	pre-treatment, post-treatment, 3-mo f/u	
					sit-to-stand trial (repetitions)	pre-treatment, post-treatment, 3-mo f/u
		Role functioning	Working	% of patients	assessment, pre-treatment, 3-mo f/u	
Masuda 2005 ⁴⁰	with or without thermal therapy, number of pain behaviors vs. outcome, VAS vs. outcome	Emotional Functioning	Anger	Cornell Medical Index	admission and discharge	
			Depression	Zung Self-Rating Depression Scale	admission and discharge	

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
			Pain behaviors (11 noted, including request for analgesics, request for compress or massage, complaints about stubborn pain, change in expression or posture due to pain, overreact to pain by gait disturbance, crying, hysterical reaction, etc.)	(blank)	one week after admission, one week before discharge
		Pain	Pain	VAS	one week after admission, one week before discharge
		Physical Functioning	Sleep quality	sleep score	admission and discharge
		Role functioning	return to work	yes/no	2 years post-discharge
Dysvik 2005 ¹²³	none reported	Coping	Coping Strategies	Ways of Coping Checklist (WCCL)	pre-treatment, post-treatment, 6-mo f/u, 12-mo f/u
		Pain	location and distribution of pain	body diagrams	pre-treatment, post-treatment, 6-mo f/u, 12-mo f/u
			pain intensity	VAS	pre-treatment, post-treatment, 6-mo f/u, 12-mo f/u
		Pharmacoeconomic/healthcare use	Analgesic use	5-pt Likert scale of frequency of use over past month	pre-treatment, post-treatment, 6-mo f/u, 12-mo f/u
		Physical Functioning	Health related quality of life	SF-36	pre-treatment, post-treatment, 6-mo f/u, 12-mo f/u
			Quality of life now and in 5 years	Cantril's ladder	pre-treatment, post-treatment, 6-mo f/u, 12-mo f/u

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
Skouen 2006 ²⁹	treatment and control groups; gender	Role functioning	return to work	National Health Insurance data on payments of sickness benefits, rehab benefits, or disability pension (absence of benefits = return to work)	monthly for 54 months after treatment
Kaapa 2006 ¹⁶³	rehab program	Emotional Functioning	belief of working ability after 2 years	0 to 10 scale	baseline, post-treatment, 6-mo f/u, 12-mo f/u, 24-mo f/u
			Depression	Depression Scale (DEPS)	baseline, post-treatment, 6-mo f/u, 12-mo f/u, 24-mo f/u
		Pain	pain (low back and sciatic)	scale of 0 to 10	baseline, post-treatment, 6-mo f/u, 12-mo f/u, 24-mo f/u
		Participant ratings of global improvement and satisfaction with treatment	general well-being after back rehab	questionnaire with 8 statements	post-treatment
		Pharmaco-economic/healthcare use	healthcare consumption during past 12 mo	total number of visits to physician, PT, nurse, etc.	baseline, 12-mo f/u, 24-mo f/u
		Physical Functioning	back disability	ODI	baseline, post-treatment, 6-mo f/u, 12-mo f/u, 24-mo f/u
		Role functioning	sick leave due to back pain	0 days, 1-30 days, more than 30 days	12-mo f/u, 24-mo f/u
Norrefalk 2006 ¹⁹³	native Swedes vs. immigrants	Pain	pain intensity	VAS	pre-treatment, 3-yr f/u
			Pharmaco-economic/healthcare use	reduction in analgesic use	self-reported consumption
		Physical Functioning	activity level	estimated level of activity (self-report)	pre-treatment, 3-yr f/u
		Role functioning	Return to work, hours worked per day	reported by local social insurance office	1-yr f/u
Maclaren 2006 ¹⁷⁶	opioid use at discharge and intake	Emotional Functioning	Depression	BDI	pretreatment, discharge
		Pain	pain intensity	MPQ-SF	pretreatment, discharge

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		Physical Functioning	patients' perceived level of impairment	PDI	pretreatment, discharge
			Physical capacity	standardized functional capacity evaluation including lifting and carrying tasks	pretreatment, discharge
		Role functioning	return to work	self-reported; full-time, part-time; structured job retraining counted as full-time, retiring counted as not working	6-mos post discharge
Buchner 2007 ¹⁰⁰	age: 18-34, 35-50, 51-65	Pain	pain intensity	VAS	before treatment, 6-mo f/u
		Participant ratings of global improvement and satisfaction with treatment	Satisfaction with therapy	Likert scale	6-mo f/u
		Physical Functioning	Functional back capacity	FFbH	before treatment, 6-mo f/u
			Health related quality of life	SF-36	before treatment, 6-mo f/u
		Role functioning	return to work	% of pts	6-mo f/u
Scerri 2006 ²⁰⁶	INTERMED scores, radiological structural abnormalities (assessed as predictors of success/failure post-treatment)	Pain	Pain severity	VAS	before treatment
		Role functioning	sick leave duration/return to work	working full-time, part-time, or not at all; sick leave duration before and after rehab	after rehab: 3 wk f/u, 3 mo f/u, 12 mo-f/u
Hatten 2006 ¹⁴⁶	health care visits and emergency room visits (pre-treatment? not well described); demographics	Emotional Functioning Physical Functioning	Self-report mental and physical functioning	Medical Outcomes Short Form-36 Health-Status Survey	pre-treatment, post-treatment (or 6-mos, for non-MPP groups)
		Pain	Pain	Pain Drawing Analog (PDA)	pre-treatment, post-treatment (or 6-mos, for non-MPP groups)
		Pharmacoeconomic/healthcare use	Medication usage	use of opiates, antidepressants, benzodiazepines	pre-treatment, post-treatment (or 6-mos, for non-MPP groups)

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
			Treatment costs	costs of treatments at pain center, pharmaceuticals prescribed at pain center, etc.	treatment duration (or 6 mos in non-MPP groups)
		Physical Functioning	Perceived functional disabilities caused by pain	Owestry Pain Disability Questionnaire	pre-treatment, post-treatment (or 6-mos, for non-MPP groups)
			Perceived pain and disability	Dallas Pain Questionnaire (DPQ)	pre-treatment, post-treatment (or 6-mos, for non-MPP groups)
			Quality of Life	Brazier et al SF-36 Conversion Algorithm Model 10	pre-treatment, post-treatment (or 6-mos, for non-MPP groups)
		Role functioning	vocational status	currently working, no work due to original injury, no work for other reason;	pre-treatment, post-treatment (or 6-mos, for non-MPP groups)
Buchner 2006 ⁹⁹	location of pain: neck or low-back	Pain	pain intensity	VAS	before treatment, 6-mo f/u
			Participant ratings of global improvement and satisfaction with treatment	Likert scale	6-mo f/u
		Physical Functioning	Functional back capacity	FFbH	before treatment, 6-mo f/u
			Health related quality of life	SF-36	before treatment, 6-mo f/u
		Role functioning	return to work	% of pts	6-mo f/u
Angst 2006 ¹⁸	Back pain vs. FM	Coping	Coping Strategies	CSQ	entry, discharge, 3-mo f/u, 6-mo f/u
		Emotional Functioning	affective health (anxiety and depression)	HADS	entry, discharge, 3-mo f/u, 6-mo f/u
		Emotional Functioning Physical Functioning	Symptoms and functioning	SF-36	entry, discharge, 3-mo f/u, 6-mo f/u
		Pain Emotional Functioning	Pain symptoms/disability, activity, behavior, mood, social relationships	WHYMPI	entry, discharge, 3-mo f/u, 6-mo f/u
		Pharmacoeconomic/h ealthcare use	Medication	medical records	entry, discharge

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
Huge 2006 ¹⁵⁴	none reported	Emotional Functioning	depressive symptoms	CES-D	assessment, 1-yr f/u
		Pain	Pain	Numeric rating Scale scores	assessment, 1-yr f/u
		Pharmacoeconomic/h ealthcare use	Use of health system	drug medication, visits to attending physician, frequency of treatments related to pain, inpatient pain treatment during 6 mos prior to 1-yr f/u, number of physicians consulted in the 6 mos prior to 1-yr f/u	pre, post
		Physical Functioning	Health related quality of life	SF-36	assessment, 1-yr f/u
			Pain-related interference with life	PDI	assessment, 1-yr f/u
Mayer 2006 ¹⁸²	obesity (5 groups- -normal, overweight, obese I, II, III--based on BMI)	Emotional Functioning	psychological measures	BDI	pre-treatment, post-treatment
				MVAS	pre-treatment, post-treatment
				pain drawing	pre-treatment, post-treatment
		Litigation and claims	case settlement	yes/no	1-yr f/u
		Pharmacoeconomic/h ealthcare use	New surgery	New surgery to same area	1-yr f/u
			Seeking treatment from new provider	% of pts, number of visits	1-yr f/u
		Role functioning	work retention	was working within 2-wks of f/u interview	1-yr f/u
			work return	any return to work, also noted whether permanent modification of work, and whether with same employer	1-yr f/u
		Symptoms and adverse events	recurrent injury	injury to same area, with or without lost work time	1-yr f/u
		Hooten 2007 ¹⁹	0	Emotional Functioning	Depression
	pain catastrophizing			Coping Strategies Questionnaire (CSQ-C)	admission, dismissal
Pain	pain severity and affective characteristics			MPI	admission, dismissal

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		Pharmaco-economic/h ealthcare use	Medication use	% using opioids, muscle relaxants, NSAIDs, benzodiazepines, antidepressants, mood stabilizers, antipsychotics	admission, dismissal
		Physical Functioning	physical functioning, health perception, social functioning	SF-36	admission, dismissal
Jensen 2007 ¹⁶¹	change in pain beliefs (Survey of Pain Attitudes), change in catastrophizing (CSQ catastrophizing scale), change in coping (Chronic Pain Coping Inventory)	Emotional Functioning	Depression	CES-D	pre-treatment, after treatment, 12-mo f/u
		Pain	pain intensity	average, least, and worst pain intensity over past week	pre-treatment, after treatment, 12-mo f/u
		Physical Functioning	physical functioning	Roland-Morris Disability Questionnaire (RMDQ)	pre-treatment, after treatment, 12-mo f/u
Norrefalk 2007 ¹⁹⁴	0	Pain	pain intensity/activity	"no pain" to "pain that demands rest such as sitting or lying down"	before treatment, 6-year follow-up
		Pharmaco-economic/h ealthcare use	consumption of analgesics	"no use of analgesics" to "overuse of analgesics"	before treatment, 6-year follow-up
		Role functioning	return to work	50% time or more	before treatment, 6 years later
Vowles 2007 ²²⁸	correlations with outcome variables calculated for: depression, pain-related anxiety, physical disability, psychosocial disability, daily rest due to pain, timed walk, sit-to-stand	Emotional Functioning	Acceptance	Chronic Pain Acceptance Questionnaire (CPAQ)	pre-treatment, post-treatment, 3-mo f/u
			catastrophizing	PCS	pre-treatment, post-treatment, 3-mo f/u

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
			Depression and general emotional distress; pain-related anxiety and avoidance	BDI	pre-treatment, post-treatment, 3-mo f/u
				PASS (Pain Anxiety Sickness Scale)	pre-treatment, post-treatment, 3-mo f/u
		Pain	subjective pain	average over past week	pre-treatment, post-treatment, 3-mo f/u
		Pharmacoeconomic/healthcare use	GP Visits	count over past 6 months	pre-treatment, post-treatment, 3-mo f/u
		Physical Functioning	Disability	Sickness Impact Profile (SIP)	pre-treatment, post-treatment, 3-mo f/u
			Hours resting and sleeping during day	self-report	pre-treatment, post-treatment, 3-mo f/u
			physical performance	10-minute walk; sit-to-stand trial (repetitions)	pre-treatment, post-treatment, 3-mo f/u
				sit-to-stand trial (repetitions)	(blank)
		Role functioning	Working	% of patients	pre-treatment, post-treatment, 3-mo f/u
Bliokas 2007 ⁹⁸	preprogram pain intensity, pre-program activity diary, pre-program kinesiophobia, treatment vs. waitlist, regular treatment vs. treatment plus graded exposure	Emotional Functioning	Depression and anxiety	DASS	pre-treatment, post-treatment
			Fear of Movement/Reinjury	Tampa Scale for kinesiophobia	pre-treatment, post-treatment
			Pain self-efficacy	PSEQ	pre-treatment, post-treatment
		Pain	pain intensity	VAS	pre-treatment, post-treatment
		Physical Functioning	activity level	Activity diary	pre-treatment, post-treatment
			mobility	six-minute walk test	(blank)

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
			Pain disability	Pain disability index (PDI)	pre-treatment, post-treatment
Dunstan 2007 ¹²¹	work participation at pre-program	Emotional Functioning	Cognitions	Pain Catastrophizing Scale	pre- and post-program
				Pain Self-Efficacy Questionnaire	pre- and post-program
				Tampa Kinesiophobia Scale	pre- and post-program
			mood	Depression, Anxiety, and Stress scales (DASS)	pre- and post-program
		Pain	Pain severity	self-report numerical scale	pre- and post-program
		Physical Functioning	Disability	Modified Roland and Morris Questionnaire	pre- and post-program
			physical functioning	sitting (number of minutes, up to one hour); standing (number of minutes, up to one hour); walking (km per daily walk); lifting (kg from floor to waist)	pre- and post-program
			Role functioning	participant's medically certified capacity for work; paid work participation	pre-program, post-program, 6-month f/u
Man 2007 ¹⁷⁷	none reported	Emotional Functioning	Work disability and work resumption	PCS	baseline, 1-mo f/u, 6-mo f/u, 12 mo f/u
			catastrophizing	PCS	baseline, 1-mo f/u, 6-mo f/u, 12 mo f/u
			Depression and anxiety	HAD Scale	baseline, 1-mo f/u, 6-mo f/u, 12 mo f/u
			Self-ability to deal with daily activities	PSEQ	baseline, 1-mo f/u, 6-mo f/u, 12 mo f/u
		Pain	Pain	VAS	baseline, 1-mo f/u, 6-mo f/u, 12 mo f/u
		Pharmacoeconomic/healthcare use	analgesic consumption	(blank)	baseline, 1-mo f/u, 6-mo f/u, 12 mo f/u
		Physical Functioning	general health-related quality of life	SF-36	baseline, 1-mo f/u, 6-mo f/u, 12 mo f/u
			physical activities	(blank)	baseline, 1-mo f/u, 6-mo f/u, 12 mo f/u
		Role functioning	subjective performance and satisfaction in daily activities	Canadian Occupational Performance Measure (COPM)	baseline, 1-mo f/u, 6-mo f/u, 12 mo f/u
			Work status	(blank)	baseline, 1-mo f/u, 6-mo f/u, 12 mo f/u

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing	
Suoyrjo 2008 ²¹⁵	neck vs. back pain vs. non-rehab; adjusted for sex, age, occupational status, and rehab year	Pharmacoeconomic/h ealthcare use	purchase of analgesics	national data of out-patient prescriptions for opioids and NSAIDs	eight-yr period: 3 years before rehab, year of rehab, 4 years post rehab	
		Role functioning	Disability pensions	Finnish Centre of Pensions	all years of the study (1994 through 2006)	
			sickness absence	national insurance data	eight-yr period: 3 years before rehab, year of rehab, 4 years post rehab	
Wormgoor 2008 ²³⁶	male vs. female for some; diagnostic category	Emotional Functioning	Mental distress	Anxiety, Depression, and irritability (ADI)	baseline, 6-mo f/u	
			Pain	pain intensity	0 to 100	baseline, 6-mo f/u
			Physical Functioning	aerobic capacity	percentage of normal	baseline, admission, discharge, 6-mo f/u
				functioning	lifting capability, jogging capability	baseline, admission, discharge, 6-mo f/u (varies by measure)
					Oswestry	baseline, admission, discharge, 6-mo f/u (varies by measure)
				lumbar flexion	percentage from normal	baseline, 6-mo f/u
Ersek 2008 ¹²⁷	treatment vs. control only	Role functioning	work ability	>= 25%	baseline, 6-mo f/u	
		Coping	pain-related cognitions and coping	Chronic Pain Coping Inventory	baseline, post-intervention, 1 year	
		Emotional Functioning	Depression	Geriatric Depression Scale	baseline, post-intervention, 1 year	
			pain-related cognitions and coping	Arthritis Self-Efficacy Scale (modified for Pain)	baseline, post-intervention, 1 year	
				Coping Strategies Questionnaire Catastrophizing subscale	baseline, post-intervention, 1 year	
	Pain	pain intensity	Brief Pain Inventory	baseline, post-intervention, 6 mos, 1 year		

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		Pharmacoeconomic/h ealthcare use	Medication use	yes/no on 4 types: acetaminophen, NSAIDs, opioids, other/adjuvants (includes antidepressants used for pain, gabapentin, corticosteroids, topical preparations)	baseline, post-intervention, 1 year
		Physical Functioning	Disability	Roland-Morris Disability Questionnaire	baseline, post-intervention, 6 mos, 1 year
			Pain interference	Brief Pain Inventory	baseline, post-intervention, 6 mos, 1 year
Buchner 2007 ¹⁰¹	degree of chronicity: used classification of von Korff et al. which includes pain intensity, pain frequency, time since onset, disability due to pain, and disability days	Pain	pain intensity	VAS	before treatment, 6-mo f/u
		Participant ratings of global improvement and satisfaction with treatment	Satisfaction with therapy	Likert scale	6-mo f/u
		Physical Functioning	Functional back capacity	FFbH	before treatment, 6-mo f/u
			Health related quality of life	SF-36	before treatment, 6-mo f/u
		Role functioning	return to work	% of pts	6-mo f/u
Norrefalk 2008 ¹⁹⁵	some results presented by white-collar and blue-collar workers, immigrants and native Swedes	Pharmacoeconomic/h ealthcare use	economic costs and benefits	net benefit in Euros, expressed as multiple of cost of running the program	(blank)
		Role functioning	return to work	full-time work, part-time work, etc., from Social Insurance office	1-yr f/u
Wang 2008 ⁴⁷	TNF-alpha positive	Biological markers	Cytokine levels in serum	TNF- α values greater than 2 pg/mL were considered as positive	beginning of study, day 10, day 21, 6-mo f/u

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		Pain	pain intensity	VAS	beginning of study, day 10, day 21, 6-mo f/u
		Physical Functioning	pain-related disability	Roland and Morris Disability Questionnaire	beginning of study, day 10, day 21, 6-mo f/u
Vowles 2008 ²²⁹	correlations with outcome variables calculated for: acceptance and values-based action	Emotional Functioning	Acceptance	CPAQ	pre-treatment, post-treatment, 3-mo f/u
			Depression	British Columbia Major Depression Inventory	pre-treatment, post-treatment, 3-mo f/u
			pain-related anxiety	PASS-20	pre-treatment, post-treatment, 3-mo f/u
		Other	values-based action	Chronic Pain Values Inventory	pre-treatment, post-treatment, 3-mo f/u
		Pain	Pain	0-10 numerical scale	pre-treatment, post-treatment, 3-mo f/u
		Pharmacoeconomic/healthcare use	Medical Visits past 6 mos	self-report	pre-treatment, 3-mo f/u
			Medication use	number of different types	pre-treatment, 3-mo f/u
		Physical Functioning	Disability	SIP	pre-treatment, post-treatment, 3-mo f/u
			physical performance	10-minute walk; sit-to-stand trial (repetitions)	pre-treatment, post-treatment, 3-mo f/u
				sit-to-stand trial (repetitions)	pre-treatment, post-treatment, 3-mo f/u
Crisostomo 2008 ¹¹⁶	lumbar spine surgery history (lumbar spinal fusion, lumbar spinal surgery other than fusion, no lumbar spine surgery)	Emotional Functioning	Depression	Center for Epidemiological Studies-Depression Scale (CES-D)	admission, dismissal
			pain catastrophizing	Coping Strategies Questionnaire (CSQ-C)	admission, dismissal

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing	
		Pain	pain severity and affective characteristics	MPI	admission, dismissal	
		Pharmacoeconomic/healthcare use	Medication use	% using opioids, muscle relaxants, NSAIDS, benzodiazepines	admission, dismissal	
Mayer 2008 ¹⁸⁷	Chronic Widespread Pain status (yes/no)	Physical Functioning	physical functioning	SF-36	admission, dismissal	
		Litigation and claims	case settlement	yes/no	1-yr f/u	
		Pharmacoeconomic/healthcare use	New surgery	New surgery to same area	1-yr f/u	
				Seeking treatment from new provider	% of pts, number of visits	1-yr f/u
		Role functioning	work retention	work return	was working within 2-wks of f/u interview	1-yr f/u
					any return to work, also noted whether permanent modification of work, and whether with same employer	1-yr f/u
		Symptoms and adverse events	recurrent injury	injury to same area, with or without lost work time	1-yr f/u	
Dersh 2008 ¹¹⁹	Opioid Dependence Disorder	Litigation and claims	claim settlement	settlement of pt's disability-related compensation claim	1-yr	
		Pharmacoeconomic/healthcare use	new healthcare provider	% of pts seeking healthcare from a new provider, suggesting dissatisfaction with health status and disability determinations by current treating and referring doctors	1-yr	
			New surgery	surgery to the original compensable injured area during the post-treatment year	1-yr	
		Physical Functioning	new injury	new injury claim to the original compensable injured area resulting in lost time from work	1-yr	
		Role functioning	return to work	work retention	any period of work during post-treatment year	1-yr f/u
					employed at time of 1-yr f/u	1-yr f/u
Wong 2009 ²³⁵	none reported	Emotional Functioning	catastrophizing	Catastrophizing subscale of PCSQ	pre-treatment, 18-wk f/u, 44-wk f/u	
			fear-avoidance beliefs	TSK	pre-treatment, 18-wk f/u, 44-wk f/u	
			Psychological well-being	HADS	pre-treatment, 18-wk f/u, 44-wk f/u	
			self-reported confidence	PSEQ	pre-treatment, 18-wk f/u, 44-wk f/u	

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
			performing activities in spite of pain		
		Pharmacoeconomic/h ealthcare use	pain-related GP and consultant visits	number of visits in past 6 mos	pre-treatment, 44-wk f/u
		Physical Functioning	impact of pain on physical daily activities	Modified SIP (24 items)	pre-treatment, 18-wk f/u, 44-wk f/u
			Quality of Life	Modified patient generated index (PGI)	pre-treatment, 18-wk f/u, 44-wk f/u
Hooten 2009 ¹⁵²	smoking status (current smoker, former smoker, never smoker)	Pain	pain severity and affective characteristics	MPI	admission, dismissal
		Pharmacoeconomic/h ealthcare use	Medication use	% using opioids, muscle relaxants, NSAIDS, benzodiazepines	admission, dismissal
van Wilgen 2009 ²²⁰	none reported	Emotional Functioning	beliefs regarding relationship between pain, activities, injuries, and re-injuries	Tampa Scale for Kinesiophobia (TSK)	beginning of waitlist period, admission, discharge, 6-mo f/u, 12-mo f/u
			Pain catastrophizing and negative self-efficacy	PCL (Pain Cognition List)	beginning of waitlist period, admission, discharge, 6-mo f/u, 12-mo f/u
			psychological symptoms	SCL-90	beginning of waitlist period, admission, discharge, 6-mo f/u, 12-mo f/u
		Pain	Pain	VAS scales	beginning of waitlist period, admission, discharge, 6-mo f/u, 12-mo f/u
		Physical Functioning	Fatigue	VAS scales	beginning of waitlist period, admission, discharge, 6-mo f/u, 12-mo f/u

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
			general health and health-related quality of life	RAND-36	beginning of waitlist period, admission, discharge, 6-mo f/u, 12-mo f/u
			physical functioning	6 minute walk test	beginning of waitlist period, admission, discharge, 6-mo f/u, 12-mo f/u
				6 minute walk test, arm endurance, arm and leg strength	beginning of waitlist period, admission, discharge, 6-mo f/u, 12-mo f/u
				arm and leg strength	beginning of waitlist period, admission, discharge, 6-mo f/u, 12-mo f/u
Suman 2009 ²⁰	None reported	Coping	Coping	Brief Pain Coping Inventory (BPCI)	pre-admission (3 to 8 mos before treatment); before treatment (1 day before); after treatment (day after); 2 mos after beginning of treatment, 5 mos after beginning treatment, 12 mos after beginning treatment
		Emotional Functioning	Depression	CES-D	pre-admission (3 to 8 mos before treatment); before treatment (1 day before); after treatment (day after); 2 mos after beginning of treatment, 5 mos after beginning treatment, 12 mos after beginning treatment

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		Pain	pain intensity and location	deep pressure pain threshold assessed with a pressure algometer	pre-admission (3 to 8 mos before treatment); before treatment (1 day before); after treatment (day after); 2 mos after beginning of treatment, 5 mos after beginning treatment, 12 mos after beginning treatment
				pain drawing	pre-admission (3 to 8 mos before treatment); before treatment (1 day before); after treatment (day after); 2 mos after beginning of treatment, 5 mos after beginning treatment, 12 mos after beginning treatment
				VAS	pre-admission (3 to 8 mos before treatment); before treatment (1 day before); after treatment (day after); 2 mos after beginning of treatment, 5 mos after beginning treatment, 12 mos after beginning treatment
Kidner 2009 ^{16b}	0	Emotional Functioning	psychological variables	BDI	1-yr f/u

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
				MVAS	1-yr f/u
				ODI	1-yr f/u
				quantified pain drawing	1-yr f/u
				SF-36	1-yr f/u
		Litigation and claims	Work-Comp case settlement	(blank)	1-yr f/u
		Pharmacoeconomic/h ealthcare use	New surgery	(blank)	1-yr f/u
			Seeking treatment from new provider	(blank)	1-yr f/u
		Role functioning	Post-rehab SSDI or SSI	yes/no	1-yr f/u
			work retention	was working	1-yr f/u
			work return	had returned to work	1-yr f/u
		Symptoms and adverse events	recurrent injury	(blank)	1-yr f/u
Gatchel 2009 ⁹⁰	treatment vs. control only	Emotional Functioning	psychosocial measures	BDI	pre-treatment, post-treatment (all participants); 6-mo for n=45 so far
				Fear Avoidance Beliefs Questionnaire	pre-treatment, post-treatment (all participants); 6-mo for n=45 so far
		Emotional Functioning Physical Functioning	psychosocial measures	MPI (Interference, affective distress scales)	pre-treatment, post-treatment (all participants); 6-mo for n=45 so far
				SF-36	pre-treatment, post-treatment (all participants); 6-mo for n=45 so far
		Pain	psychosocial measures	Pain VAS	pre-treatment, post-treatment (all participants); 6-mo for n=45 so far
		Pharmacoeconomic/h ealthcare use	one-year outcomes	met Medical Board; continued seeking medical care; continued taking pain meds; new surgical procedures for Pain; total no of MD and/or ER visits for pain; total no of different health care	1 year post-treatment

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
				providers seen for pain; average pain VAS rating	
			Socio-economic measures	Healthcare utilization (pain clinic, PT, Primary care, behavioral health); pain med use (narcotics, NSAIDS, muscle relaxants, acetaminophen)	pre-treatment, post-treatment (all participants); 6-mo for n=45 so far, 12-mo for n=24 so far)
		Physical Functioning	Physical measures	lifting, treadmill, METS, VO2, Lumbar Flexion, Lumbar Extension	pre-treatment, post-treatment (all participants)
			psychosocial measures	ODI	pre-treatment, post-treatment (all participants); 6-mo for n=45 so far
				PDQ	pre-treatment, post-treatment (all participants); 6-mo for n=45 so far
				Physical Activity	pre-treatment, post-treatment (all participants); 6-mo for n=45 so far
Gagnon 2009 ¹³⁴	0	Emotional Functioning	psychological profile	Hospital Anxiety Depression scale	intake, discharge, 3-mo f/u, 6-mo f/u, 12-mo f/u
		Emotional Functioning Physical Functioning	overall quality of life	VAS	intake, discharge, 3-mo f/u, 6-mo f/u, 12-mo f/u
		Pain	pain intensity	VAS	intake, discharge, 3-mo f/u, 6-mo f/u, 12-mo f/u
		Physical Functioning	functional status/disability	Dallas Pain Questionnaire	intake, discharge, 3-mo f/u, 6-mo f/u, 12-mo f/u
				Roland-Morris Disability Questionnaire	intake, discharge, 3-mo f/u, 6-mo f/u, 12-mo f/u
			Physical capacity	variety (flexibility, muscle endurance, etc.)	intake, discharge, 3-mo f/u, 6-mo f/u, 12-mo f/u

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
Howard 2009 ¹⁵³	"presentees" vs. absentees	Litigation and claims	claim settlement	settlement of pt's disability-related compensation claim	1-yr
		Pharmacoeconomic/healthcare use	new healthcare provider	% of pts seeking healthcare from a new provider, suggesting dissatisfaction with health status and disability determinations by current treating and referring doctors	1-yr
			New surgery	surgery to the original compensable injured area during the post-treatment year	1-yr
		Role functioning	return to work	any period of work during post-treatment year	1-yr f/u
			work retention	actually working within 2 weeks of outcome interview	1-yr f/u
			Work status	full-time/part-time/school/light-duty; change in job demand preinjury to post-treatment	1-yr f/u
Mangels 2009 ¹⁷⁸	none reported	Coping	Coping with pain	German Pain Management Questionnaire (Fragebogen zur Schmerzverarbeitung)	pre-treatment, post-treatment, 1-yr f/u
		Emotional Functioning	Depression	BDI	pre-treatment, post-treatment, 1-yr f/u
			Life satisfaction concerning health	German Life Satisfaction Questionnaire (Fragebogen zur Lebenszufriedenheit)	pre-treatment, post-treatment, 1-yr f/u
			Self-efficacy	PSEQ	pre-treatment, post-treatment, 1-yr f/u
		Pain	Pain perception	Pain perception scale (SES)	pre-treatment, post-treatment, 1-yr f/u
		Physical Functioning	Disability	PDI	pre-treatment, post-treatment, 1-yr f/u
			health-related quality of life/health status	SF-12	pre-treatment, post-treatment, 1-yr f/u
			depressive symptoms	CES-D	pre-treatment, 22-week f/u
Gunreben-Stempfle 2009 ²⁸	none reported	Pain	Headache diary for 4 weeks	Headache diary recording: average pain intensity, number of headache days per month, headache hours per day, headache characteristics (pulsating, aggravation by routine physical activity), associated symptoms (nausea, photophobia, etc.), type and days of medication use	pre-treatment, during treatment, post-treatment
			Pain Chronicity	Mainz Pain Staging System	pre-treatment, 22-week f/u
		Physical Functioning	Health-related Quality of Life	SF-36	pre-treatment, 22-week f/u

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
Angst 2009 ²¹	none reported	Coping	Coping Strategies	CSQ	entry, discharge, 6-mo f/u
		Emotional Functioning	affective health (anxiety and depression)	HADS	entry, discharge, 6-mo f/u
		Emotional Functioning Physical Functioning	Symptoms and functioning	SF-36	entry, discharge, 6-mo f/u
		Pain Emotional Functioning	Pain symptoms/disability, activity, behavior, mood, social relationships	WHYMPI	entry, discharge, 6-mo f/u
		Pharmacoeconomic/healthcare use	Medication	medical records	entry, discharge
Zunin 2009 ²³⁸	none reported	Emotional Functioning	psychological functioning	Million Clinical Multiaxial Inventory-III (MCMI-III)	pre-treatment, post-treatment, 1-year follow-up
				Pain Patient Profile (P3)	pre-treatment, post-treatment, 1-year follow-up
				Symptom Checklist-90-Revised (SCL-90-R)	pre-treatment, post-treatment, 1-year follow-up
		Pharmacoeconomic/healthcare use	Drug Utilization	Amount of Schedule II opiates prescribed	Intake, completion, one year f/u
		Physical Functioning	Disablement	clinical assessment and self-report	Intake, completion, one year f/u
			Quality of Life	Quality of Life Inventory (QOLI)	pre-treatment, post-treatment, 1-year follow-up
Carleton 2010 ¹⁰⁸	Extremity pain vs. lower-back pain	Emotional Functioning	Anxiety, Depression	Anxiety Sensitivity Index	intake, mid-treatment, end of treatment
				CES-D	intake, mid-treatment, end of treatment
				Pain Anxiety Symptoms Scale-20	intake, mid-treatment, end of treatment

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
			pain catastrophizing	PCS	intake, mid-treatment, end of treatment
		Pain	Pain	VAS	intake, mid-treatment, end of treatment
		Physical Functioning	Functional ability	Functional Ability Percent Deficit	intake, mid-treatment, end of treatment
			Illness-Injury sensitivity	Illness/Injury Sensitivity Index - Revised (ISI-R)	intake, mid-treatment, end of treatment
			Perceived disability	Index of Perceived Disability (IPD)	intake, mid-treatment, end of treatment
Law 2009 ¹⁷²	none	Emotional Functioning	Pain self-efficacy questionnaire	PSEQ	before and after treatment
		Physical Functioning	measures addressing study objective of muscle extensibility and stretch tolerance	(blank)	(blank)
Hooten 2009 ¹⁵¹	sex, smoking status (current smoker, former smoker, never smoker)	Emotional Functioning	Depression	Center for Epidemiological Studies-Depression Scale (CES-D)	admission, dismissal
			pain catastrophizing	Pain Catastrophizing scale (PCS)	admission, dismissal
			Pain-related anxiety and fear	Pain Anxiety Symptoms Scale short form (PASS-20)	admission, dismissal
		Pain	pain severity and affective characteristics	MPI	admission, dismissal
		Pharmacoeconomic/healthcare use	Medication use	% using opioids, muscle relaxants, NSAIDs, benzodiazepines	admission, dismissal
		Physical Functioning	physical functioning, health perception, social functioning	SF-36	admission, dismissal
Vowles 2010 ²³⁰	correlations with	Emotional Functioning	Depression	British Columbia Major Depression Inventory	pre-treatment, post-

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
	outcome variables calculated for: Brief Pain Coping Inventory - 2 (BPCI-2) subscales Pain Management and Psychological Flexibility				treatment, 3-mo f/u
			pain-related anxiety	PASS-20	pre-treatment, post-treatment, 3-mo f/u
		Pain	Pain	0-10 numerical scale	pre-treatment, post-treatment, 3-mo f/u
		Pharmacoeconomic/healthcare use	Medical Visits past 6 mos	self-report	pre-treatment, 3-mo f/u
		Physical Functioning	Disability	SIP	pre-treatment, post-treatment, 3-mo f/u
			physical performance	10-minute walk; sit-to-stand trial (repetitions)	pre-treatment, post-treatment, 3-mo f/u
				sit-to-stand trial (repetitions)	pre-treatment, post-treatment, 3-mo f/u
Hazard 2009 ¹⁴⁹	satisfaction with progress, goal achievement, clinical indicators	Emotional Functioning	Changes in clinical measures--emotional functioning	fear avoidance	pre- post- treatment
		Pain	average pain	Iowa pain thermometer	f/u (1-2 years post treatment)
			Changes in clinical measures--pain	Pain	pre- post- treatment
		Participant ratings of global improvement and satisfaction with treatment	Goal achievement	Patient defined importance and achievement for each personal goal	f/u (1-2 years post treatment)
			Treatment satisfaction	6-point Likert scale	f/u (1-2 years post treatment)
		Physical Functioning	Changes in clinical measures--Physical functioning	disability, lifting, trunk flexibility, treadmill endurance	pre- post- treatment
			Physical Function	SF-36	f/u (1-2 years post treatment)

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		Role functioning	Work status	Current work status, level (full vs. part time), capacity	f/u (1-2 years post treatment)
Verra 2009 ²²	MPI cluster groups (dysfunctional, interpersonally distressed, adaptive copers)	Coping	Coping Strategies	CSQ	entry, discharge
		Emotional Functioning	affective health (anxiety and depression)	HADS	entry, discharge
		Emotional Functioning Physical Functioning	Symptoms and functioning	SF-36	entry, discharge
		Pain Emotional Functioning	Pain symptoms/disability, activity, behavior, mood, social relationships	WHYMPI	entry, discharge
Demoulin 2010 ¹¹⁸	sex (physical function outcomes only); pain, function, and kinesiophobia reported for control group 4 weeks apart	Emotional Functioning	Fear of movement or reinjury	Tampa Scale for kinesiophobia	beginning of program, half-way through program, end of program
		Other	pt knowledge of etiopathogenesis, management, and prevention of LBP	written test: 5 true-false questions, 10 multiple choice questions practical test: Movement Behavior Test evaluating practical knowledge of back-sparing technique	beginning of program, half-way through program, end of program
		Pain	pain intensity	VAS	beginning of program, half-way through program, end of program
		Physical Functioning	impact of back pain on daily activities	Roland-Morris Low Back Pain and Disability Questionnaire	beginning of program, half-way through program, end of program

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
			Impact of pain on ADLs	Dallas Pain Questionnaire	beginning of program, half-way through program, end of program
			physical functioning	trunk strength, range of motion, aerobic capacity, Sorenson test (endurance of trunk extensor muscles)	beginning of program, half-way through program, end of program
Burnham 2010 ²³	medical management vs. MPP	Pain	pain intensity	numerical scale 0 to 10	intake, mid-treatment, end of treatment
		Physical Functioning	Pain interference in 7 domains: general activity, mood, walking ability, normal work, relations with others, sleep, life enjoyment	Pain Interference Questionnaire	intake, mid-treatment, end of treatment
Perry 2010 ⁷⁷	treatment vs. control	Emotional Functioning	Acceptance	SCL-CSQ acceptance	assessment (all pts); 6-mo f/u (usual care only); post-treatment, 1-mo f/u, 9-mo f/u (MPP pts only)
			Anxiety and depression	HADS (Hospital Anxiety and Depression Scale)	assessment (all pts); 6-mo f/u (usual care only); post-treatment, 1-mo f/u, 9-mo f/u (MPP pts only)
			catastrophizing	PRSS Catastrophizing	assessment (all pts); 6-mo f/u (usual care only); post-treatment, 1-mo f/u, 9-mo f/u (MPP pts only)
			Self-efficacy	Moorong Self-Efficacy Scale	assessment (all pts); 6-mo f/u (usual care only); post-treatment, 1-mo f/u, 9-mo f/u (MPP pts only)
				PSEQ	assessment (all pts); 6-mo f/u (usual care

Table D3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
					only); post-treatment, 1-mo f/u, 9-mo f/u (MPP pts only)
		Emotional Functioning Physical Functioning	Mental and physical health	SF-12 MCS, SF-12 PCS	assessment (all pts); 6-mo f/u (usual care only); post-treatment, 1-mo f/u, 9-mo f/u (MPP pts only)
		Pain	pain intensity	documented by site with usual intensity of pain marked 0 to 10	assessment (all pts); 6-mo f/u (usual care only); post-treatment, 1-mo f/u, 9-mo f/u (MPP pts only)
		Physical Functioning	Life interference	MPI Life Interference	assessment (all pts); 6-mo f/u (usual care only); post-treatment, 1-mo f/u, 9-mo f/u (MPP pts only)
Gatchel 2010 ¹⁴²	SF-36 scores, ODI scores	Pharmacoeconomic/h ealthcare use	new healthcare provider	% of pts seeking healthcare from a new provider, suggesting dissatisfaction with health status and disability determinations by current treating and referring doctors	1-yr
			Number of healthcare visits to new provider	number of visits in year post treatment	1-yr f/u
		Physical Functioning	Health status	SF-36	pre-treatment, post-treatment
			Perceived functional disabilities caused by pain	Owestry Disability Index (ODI)	pre-treatment, post-treatment
		Role functioning	return to work	any period of work during post-treatment year	1-yr f/u
			work retention	actually working within 2 weeks of outcome interview	1-yr f/u

Table D4. Study details

Citation	Study/Center Name	Country	Funding Source for Study	N	Number of Patients Lost to Followup	Setting (in-patient/out-patient)
Alaranta 1994 ⁹¹	AKSELI	Finland	N/A	152 intervention / 141 reference group	2%	inpatient (MPP had additional pre-training period at home)
Altmaier 1992 ⁹²	Low Back Rehabilitation Program, Spine Diagnostic and Treatment Center, Dept of Orthopaedic Surgery, University of Iowa Hospitals and Clinics	USA	National Institute for Handicapped Research	45	2 dropped out (excluded from data)	inpatient
Andary 1997 ⁹³	College of Osteopathic Medicine, Michigan State University	USA	N/A	12 with TBI, 12 without TBI	0	outpatient
Angst 2006 ¹⁸	RehaClinic, Bad Zurzach	Switzerland	Zurzach Rehabilitation Foundation SPA	125	100 pts with incomplete data (initial cohort was 225)	inpatient
Angst 2009 ²¹	RehaClinic, Bad Zurzach	Switzerland	Zurzach Rehabilitation Foundation SPA	307	started with 331 pts, 24 dropped out during treatment, 97 dropped out at 6-mo f/u	inpatient
Bailey 2003 ⁹⁴	Texas Pain Medicine Clinic	USA	NIH	162	19 dropped out of treatment, 41 were not reached for 6-mo f/u, 59 were not reached for 1-yr f/u	outpatient
Bendix 1998 ⁹⁵	Copenhagen Back Center	Denmark	Danish Rheumatism Association, Nycomed-DAK, AP Møller og Hustrus Fond, Pensam, Assurandørsocietetet, and others (private foundations, etc.)	238	238 randomized, 13 never started treatment, 20 dropped out of treatment, 31 lost at 5-yr f/u (11 dropouts contacted at 5-yr f/u)	outpatient
Bendix 1995 ⁸¹	Copenhagen Back Center	Denmark	Danish Rheumatism Association, Nycomed-DAK, AP Møller og Hustrus Fond, Pensam,	132	132 randomized, 9 never started treatment, 14 dropped out of treatment, 3 lost at	outpatient

Table D4. Study details (continued)

Citation	Study/Center Name	Country	Funding Source for Study	N	Number of Patients Lost to Followup	Setting (in-patient/out-patient)
			Assurandørsocietetet, and others (private foundations, etc.)		4-mo f/u (leaving 106 with full data)	
Bendix 1996 ⁴³	Copenhagen Back Center	Denmark	Danish Rheumatism Association, Nycomed-DAK, AP Møller og Hustrus Fond, Pensam, Assurandørsocietetet, and others (private foundations, etc.)	106	of 106 randomized, 2 never started, 7 dropped out of treatment, 3 could not be reached at f/u	outpatient
Bendix 1997 ⁷⁹	Copenhagen Back Center	Denmark	Danish Rheumatism Association, Nycomed-DAK, AP Møller og Hustrus Fond, Pensam, Assurandørsocietetet, and others (private foundations, etc.)	132	132 randomized, 9 never started treatment, 14 dropped out of treatment, 6 lost at 12-mo f/u (leaving 103 with full data)	outpatient
Bendix 1998 ⁹⁶	Copenhagen Back Center	Denmark	Danish Ministry of Health, National Health Fund of Research and Development, Foundation of Director E. Danielsen and wife	816	complicated	outpatient
Bendix 1998 ⁹⁷	Copenhagen Back Center	Denmark	Danish Rheumatism Association, Nycomed-DAK, AP Møller og Hustrus Fond, Pensam, Assurandørsocietetet, and others (private foundations, etc.)	238	238 randomized, 13 never started treatment, 20 dropped out of treatment, 14 lost at 2-yr f/u (6 dropouts contacted at 2-yr f/u)	outpatient
Bendix 2000 ⁷⁸	Copenhagen Back Center	Denmark	Danish Rheumatism Association, Insurance Company for Industrial Injuries, the DANICA Pension, the Municipal Pension Insurance Company Ltd., and others	138	of 138 randomized, 11 never started, 21 dropped out during treatment, 7 lost at 12-mo f/u	outpatient

Table D4. Study details (continued)

Citation	Study/Center Name	Country	Funding Source for Study	N	Number of Patients Lost to Followup	Setting (in-patient/out-patient)
			(private foundations, etc.)			
Bliokas 2007 ⁹⁸	Illawarra Pain Management Service, Port Kembla Hospital, Warrawong, NSW	Australia	NSW Motor Accidents Authority research grant	143	49	outpatient
Buchner 2006 ⁹⁹	University of Heidelberg	Germany	none reported	365	N/A (used only treatment completers with full data)	inpatient
Buchner 2007 ¹⁰⁰	University of Heidelberg	Germany	none reported	405	20 pts discharged, discontinued voluntarily during the follow-up period or were not avail for final outcome analysis, leaving 405	inpatient
Buchner 2007 ¹⁰¹	University of Heidelberg	Germany	None	387	20 pts discharged, discontinued voluntarily during the follow-up period or were not avail for final outcome analysis, leaving 387	inpatients
Burnham 2010 ²³	Central Alberta Pain and Rehabilitation Institute (CAPRI)	Canada	none reported	29 MPP, 53 supervised medication management	4 MPP pts left program	outpatient
Burns 2000 ¹⁰²	Center for Rehabilitation, Lake Forest Hospital	USA	not reported	93	11 pts dropped out of treatment, 11 had incomplete functional capacity measures due to physical restrictions, 8 did not complete MMPI-2 (initial cohort was 123)	outpatient
Burns 1998 ¹⁰³	Center for Rehabilitation, Lake Forest Hospital	USA	partial NIH	101	11 pts dropped out of treatment, 11 had incomplete functional capacity measures due to physical restrictions	outpatient

Table D4. Study details (continued)

Citation	Study/Center Name	Country	Funding Source for Study	N	Number of Patients Lost to Followup	Setting (in-patient/out-patient)
					(initial cohort was 123)	
Burns 1998 ¹⁰⁴	Center for Rehabilitation, Lake Forest Hospital	USA	partial NIH	94	N/A (used only treatment completers)	outpatient
Burns 2003 ¹⁰⁵	Pain & Rehabilitation Clinic of Chicago (PRCC) and Rehabilitation Institute of Chicago (RIC)	USA	not reported	65	?	outpatient
Burns 2003 ¹⁰⁶	Pain & Rehabilitation Clinic of Chicago (PRCC) and Rehabilitation Institute of Chicago (RIC)	USA	none reported	90	?	outpatient
Burns 2005 ¹⁰⁷	Pain & Rehabilitation Clinic of Chicago (PRCC) and Rehabilitation Institute of Chicago (RIC)	USA	not reported	65	?	outpatient
Carleton 2010 ¹⁰⁸	University of Regina	Canada	CIHR	51	not reported	outpatient
Cassisi 1989 ¹⁰⁹	University of Miami Comprehensive Pain and Rehabilitation Center (UMCPRC)	USA	none reported	236	39%	inpatient
Cedraschi 2004 ¹⁶	Geneva University Hospital	Switzerland	Swiss National Foundation for Research	164	35	outpatient
Chapman 1990 ¹¹⁰	Emory Pain Control Center	USA	none reported	160	0	inpatient and outpatient
Chapman 1994 ¹¹¹	Emory Pain Control Center*	USA	none reported	122	0--included only pts who completed treatment and provided follow-up data	inpatient and outpatient
Chapman 1996 ¹¹²	Multiple-USA	USA	none reported	216	approx 42 pts did not complete 3-6 mo f/u data	outpatient
Chapman 2000 ⁵⁰	Multiple-USA	USA	none reported	309	15% dropout rate at Center A, 12% dropout rate at Centers B and C; 32 completers at Center	2 outpatient, one inpatient (Center C)

Table D4. Study details (continued)

Citation	Study/Center Name	Country	Funding Source for Study	N	Number of Patients Lost to Followup	Setting (in-patient/out-patient)
					A and 32 completers at Center B did not provide 3-6 mo f/u, Center C did not have any f/u data (only pre-post)	
Ciechanowski 2003 ¹¹³	University of Washington Multidisciplinary Pain Center	USA	NIH-NINDS grant	111	29 pts refused survey	outpatient
Connally 1991 ¹¹⁴	Pain Control and Rehabilitation Institute of Georgia	USA	none reported	17	3 withdrew from treatment	inpatient and outpatient
Cott 1990 ¹¹⁵	Behavioural Medicine Unit, St. Joseph's Hospital, McMaster University	Canada	one author supported by NHRDP	261	7 withdrew from treatment	outpatient
Crisostomo 2008 ¹¹⁶	Mayo Clinic: Pain Management Center/Comprehensive Pain Rehabilitation Center	USA	no institutional or industry funds	383	dismissal questionnaires completed by 81% of study pts	outpatient
Currie 2003 ¹⁵	Addiction Centre, Foothills Medical Centre, Alberta	Canada	none reported	44	28% at 3-moth f/u, 32% at 12-month f/u	outpatient
Davis 1992 ¹¹⁷	AMI Brookwood Pain and Rehabilitation Center, Birmingham, AL	USA	no commercial funding	46	0	inpatient
Deardorff 1991 ⁷³	Pain Center, Valley Presbyterian Hospital, Van Nuys, CA	USA	not reported	42 treated, 15 not treated	of 55 pts who treatment, 7 dropped out, 6 were located at f/u; of 23 non-treated, 5 could not be located 3 refused participation	inpatient and outpatient (17 outpatient only, remainder started inpatient, finished outpatient)
Demoulin 2010 ¹¹⁸	Spinal Rehabilitation Center, University Hospital, Liège	Belgium	none reported	262: 136 completed treatment, 24 control patients (scheduled for treatment)	126 dropped out of treatment	outpatient
Dersh 2008 ¹¹⁹	PRIDE	USA	partial NIH	1323	123 pts didn't complete treatment	outpatient

Table D4. Study details (continued)

Citation	Study/Center Name	Country	Funding Source for Study	N	Number of Patients Lost to Followup	Setting (in-patient/out-patient)
Doleys 1986 ¹²⁰	Pain Management Center, Brookwood Medical Center, Birmingham, AL	USA	none reported	95	0; only treatment completers with sufficient data were included	inpatient
Dunstan 2007 ¹²¹	Rural NSW	Australia	none reported	30	0	outpatient
Dysvik 2004 ¹²²	Unknown-Norway	Norway	Rogaland Central Hospital, Stavanger University College	88	12 dropped out of treatment, leaving 76 completers	outpatient
Dysvik 2005 ¹²³	Unknown-Norway	Norway	Rogaland Central Hospital, Stavanger University College	88	27 dropped out of treatment, leaving 61 completers	outpatient
Edwards 2003 ¹²⁴	Unknown-USA	USA	NIH	171	?	not reported
Elkayam 1996 ¹²⁵	Maccabi Back Center	Israel	none reported	84	17 dropped out of treatment, leaving 67 in treatment group	outpatient
Elkayam 1996 ¹²⁶	Maccabi Back Center*	Israel	none reported	73	not reported	outpatient
Ersek 2008 ¹²⁷	Geriatric Pain Self-Mgmt	USA	National Institute of Nursing Research, NIH	256	38	pt's retirement facility
Evans 2001 ¹²⁸	PRIDE	USA	partial NIH	395	none--only pts with f/u data were included	outpatient
Feuerstein 1993 ¹²⁹	Center for Occupational Rehabilitation at the University of Rochester Medical Center	USA	National Institute on Disability and Rehabilitation Research and an NIOSH grant	19 MPP, 15 usual care	?	outpatient
Fishbain 2005 ¹³⁰	The Rosamoff Pain Center, South Shore Hospital, Miami Beach, FL	USA	not reported	118	0	combo ("usually 15 days as inpatients and 15 days as outpatients")
Flavell 1996 ¹³¹	Chronic Back Pain Programme, Royal Melbourne Hospital	Australia	Victorian WorkCover Authority	138	55 pts had 3-mo f/u data	outpatient
France 1991 ¹³²	Duke University Medical Center*	USA	not reported	28	not reported	inpatient
Fricton 1996 ¹³³	TMJ and Craniofacial Pain Clinic, University of Minnesota	USA	not reported	94	Of 138 TMJ pts seen over one year, 20% either not contacted or did not return for	outpatient

Table D4. Study details (continued)

Citation	Study/Center Name	Country	Funding Source for Study	N	Number of Patients Lost to Followup	Setting (in-patient/out-patient)
					reevaluation 1yr later; of 111 seen at follow-up, 76% completed all post-treatment instruments and were included in the study	
Gagnon 2009 ¹³⁴	Renodos	none reported	496 responded at 3-mo f/u, 292 responded at 6-mo f/u, 97 responded at 12-mo f/u	France	inpatient or outpatient	12-13% had prior lumbar spine surgery; 27-28% were working at the beginning of treatment; 12-14% reported engaging in sport and physical activity
Garcy 1996 ¹³⁵	PRIDE	USA	One author supported by a grant from NIMH	1204	Total cohort size of 1301; follow-up info unavailable for 97	outpatient
Gatchel 1986 ¹³⁶	PRIDE	USA	not reported	134	not reported	outpatient
Gatchel 1986 ¹³⁷	PRIDE	USA	not reported	134	not reported	outpatient
Gatchel 1994 ¹³⁸	PRIDE	USA	not reported	152	none--only pts with f/u data were included	outpatient
Gatchel 1999 ¹³⁹	PRIDE*	USA	partial NIMH	146	18 did not complete treatment, 1-yr f/u socioeconomic data IS available and included for those non-completers	outpatient
Gatchel 2002 ¹⁴⁰	Eugene McDermott Center for Pain Management, University of Texas Southwestern Medical Center at Dallas	USA	NIH and Sid Richardson Foundation	65	N/A	outpatient
Gatchel 2005 ¹⁴¹	PRIDE*	USA	NIH and DOD	1679	differs by outcome measure (n reported for outcomes ranges from 482 to 1256; most are 1100 to 1200)	outpatient
Gatchel 2009 ⁹⁰	Wilford Hall Medical Center and Brooke Army	USA	NIH and Congressionally	30 MPP, 36 standard	0 (preliminary results here--not all follow-	not reported

Table D4. Study details (continued)

Citation	Study/Center Name	Country	Funding Source for Study	N	Number of Patients Lost to Followup	Setting (in-patient/out-patient)
	Medical Center		Directed Medical Research Program's Peer Review Medical Research Program	treatment	up data has been collected for all patients because it was not yet 6 or 12 months from their treatment date)	
Gatchel 2010 ¹⁴²	PRIDE*	USA	not specified	1180	pre- and post-rehab data avail for ~970 pts; 1-yr f/u available for ~830 pts	outpatient
Glenn 2003 ¹⁴³	Pain & Rehabilitation Clinic of Chicago (PRCC) and Rehabilitation Institute of Chicago (RIC)	USA	not reported	65	?	outpatient
Gross 2005 ¹⁴⁴	Workers' Compensation Board-Alberta	Canada	Federal and Foundation funds	438	some missing data for 26% of subjects	not reported
Guck 1988 ¹⁴⁵	Nebraska Pain Management Center (NPMC)/University of Nebraska	USA	not reported	635	?	inpatient
Guck 1999 ⁸⁰	Nebraska Pain Management Center (NPMC)/University of Nebraska	USA	no commercial funding	123	207 pts completed program; 135 were interviewed at 6-mo f/u; 123 provided data relevant to this study	outpatient
Gunreben-Stempfle 2009 ²⁸	University of Erlangen-Nuremberg	Germany	none reported	42 in 96-hr treatment cohort, 46 pts in 20-hr treatment cohort, 80 pts receiving primary care alone	5 of the 42	outpatient
Gustafsson 2002 ¹³	Hospital for Rheumatology and Rehabilitation in Östersund	Sweden	Reumatikerförbundet, Center for Studies in Health and Quality of Life, Mid Sweden University, Swedish Medical Research Council, Department of Rehabilitation	43 (23 treatment, 20 waiting-list control)	of 44 patients who began treatment, 1 withdrew from treatment, 2 were not available at assessments 2 and 3, 6 were not available at	outpatient

Table D4. Study details (continued)

Citation	Study/Center Name	Country	Funding Source for Study	N	Number of Patients Lost to Followup	Setting (in-patient/out-patient)
			Medicine at Karolinska Hospital		assessment 4	
Hatten 2006 ¹⁴⁶	Eugene McDermott Center for Pain Management, University of Texas Southwestern Medical Center at Dallas	USA	partial NIH and DOD	121 (completed MPP w/o supplemental procedures = 59; completed MPP with supplemental procedures = 22; meds mgmt only = 16; meds mgmt plus supplemental procedures = 24)	N/A	outpatient
Hazard 1989 ¹⁴⁷	New England Back Center	USA	None noted	90, including 59 completers, 5 dropouts, 17 denied insurance authorization, 6 crossovers	?	outpatient
Hazard 1991 ¹⁴⁸	New England Back Center	USA	Danish Research Academy and Sygekassernes Helsefond, Denmark	258	23% to 30% depending on cohort	outpatient
Hazard 2009 ¹⁴⁹	Dartmouth-Hitchcock Medical Center's Spine Center	USA	no commercial funding	106	19%	outpatient
Hildebrandt 1997 ¹⁵⁰	University of Göttingen	Germany	Federal Ministry of Science and Research	90	8	outpatient
Hooten 2007 ¹⁹	Mayo Clinic: Pain Management Center/Comprehensive Pain Rehabilitation Center	USA	not reported	159	11% did not complete program	outpatient
Hooten 2009 ¹⁵¹	Mayo Clinic: Pain Management Center/Comprehensive Pain Rehabilitation Center	USA	no institutional or corporate funds	1241	~15% did not complete program	outpatient
Hooten 2009 ¹⁵²	Mayo Clinic: Pain Management	USA	no institutional or corporate funds	1241	~15% did not complete program	outpatient

Table D4. Study details (continued)

Citation	Study/Center Name	Country	Funding Source for Study	N	Number of Patients Lost to Followup	Setting (in-patient/out-patient)
	Center/Comprehensive Pain Rehabilitation Center					
Howard 2009 ¹⁵³	PRIDE*	USA	not reported	2191	no outcome data for 750 non-completers	outpatient
Huge 2006 ¹⁵⁴	Munich Functional Restoration Program	Germany	none reported	44	0	outpatient
Jensen 1995 ¹⁵⁵	Unknown-Sweden*	Sweden	Board for Research in Health and Care in the Northern region of Sweden, Folksam research	66	4	inpatient
Jensen 1994 ¹⁵⁶	NärRehab/Hälsoinvest, Örebro	Sweden	AMF, Trygghetsförsäkringar	70: 35 treatment, 35 control	4	outpatient
Jensen 1998 ¹⁵⁷	NärRehab/Hälsoinvest, Örebro	Sweden	AMF, Trygghetsförsäkringar	96 (67 treatment, 29 control)	13 (initial cohort size was 76 treatment and 35 control)	outpatient
Jensen 1992 ¹⁵⁸	University of Washington Multidisciplinary Pain Center	USA	partial AHCPR funding; partial National Research Service Award; partial Graduate School Research Fund (UW)	144	116 enrolled for treatment of 144 screened; 3- mo f/u completed by 52 pts	inpatient
Jensen 1994 ¹⁵⁹	University of Washington Multidisciplinary Pain Center	USA	partial National Research Service Award; partial Graduate School Research Fund (UW)	94	47 pts began study but didn't provide 3 to 6 mo f/u data (not included in the N = 94 figure)	inpatient
Jensen 2001 ¹⁶⁰	University of Washington Multidisciplinary Pain Center	USA	NIH	197	28%	outpatient
Jensen 2003 ¹⁴	University of Washington Multidisciplinary Pain Center and St. Joseph's Health Care Arthritis Institute multidisciplinary fibromyalgia program (London, Ontario)	US and Canada	Partial NIH	144 Washington (UW), 99 Fibromyalgia (FM)	31 UW, 18 FM	outpatient
Jensen 2004 ¹⁷	University of Washington Multidisciplinary Pain Center and St. Joseph's Health Care Arthritis Institute multidisciplinary	US and Canada	Partial NIH	110 Washington, 319 Fibromyalgia	32 UW, 102 FM	outpatient

Table D4. Study details (continued)

Citation	Study/Center Name	Country	Funding Source for Study	N	Number of Patients Lost to Followup	Setting (in-patient/out-patient)
	fibromyalgia program (London, Ontario)					
Jensen 2007 ¹⁶¹	University of Washington Multidisciplinary Pain Center	USA	NIH support for data collection	141	N/A (used only treatment completers with full data)	outpatient
Jousset 2004 ¹⁶²	Multiple-France	France	Union Régionale des Caisses d'Assurance Maladie des Pays de Loire	86	3 total (2 didn't start the program, 1 lost at 6 mo f/u)	outpatient
Kaapa 2006 ¹⁶³	Finnish Back Institute, Helsinki	Finland	foundation funds; no commercial benefits	120	5 lost at 6-mo f/u, 8 more lost at 12-mo f/u, 12 more lost at 24 mo f/u	outpatient
Kenny 2004 ¹⁶⁴	Royal North Shore Hospital, Sydney: ADAPT/SpinalADAPT	Australia	None noted	77	not reported	outpatient
Keogh 2005 ¹⁶⁵	Royal National Hospital for Rheumatic Diseases, Bath	UK	none reported	98	143 pts initially recruited, 13 withdrew from treatment, 32 did not attend f/u appt	residential or inpatient- hospital
Kidner 2009 ¹⁶⁶	PRIDE	USA	partial NIH	1226	272	outpatient
Kleinke 1988 ¹⁶⁷	Spaulding Rehabilitation Hospital, Boston	USA	none reported	60	N/A (used only treatment completers)	inpatient
Kohles 1990 ¹⁶⁸	PRIDE	USA	none reported	45 from first year of program, 57 from a later year	N/A (used only treatment completers)	outpatient
Kole-Snijders 1999 ¹⁶⁹	Hoensbroeck Rehabilitation Center	Netherlands	Investigative Medicine Fund of the Dutch Insurance Council	148	19 dropped out during treatment, 16 lost during follow-up, 5 lost during waiting periods for a total of 40 lost out of 148	inpatient and outpatient
Koopman 2004 ¹⁷⁰	Rehabilitation Center Heliomare	Netherlands	none reported	51	17 (initial cohort was 68)	outpatient
Lang 2003 ¹⁷¹	University of Erlangen- Nuremberg	Germany	German Federal Ministry of Health	51 MPP pts, 157 comparison usual care patients	5 of 56 patients who began the MPP dropped out before the fifth session	outpatient
Law 2009 ¹⁷²	Royal North Shore Hospital, Sydney: ADAPT/SpinalADAPT	Australia	none reported	30	0	outpatient

Table D4. Study details (continued)

Citation	Study/Center Name	Country	Funding Source for Study	N	Number of Patients Lost to Followup	Setting (in-patient/out-patient)
Lipchik 1993 ⁴⁸	Cleveland Clinic Pain Management Unit	USA	not reported	50 inpatient and 46 comparison from an outpatient program	3 pts from comparison group (initial cohort of 49), 1 pt from treatment group (initial cohort of 50)	inpatient (compared to an outpatient program)
Luoto 1996 ¹⁷³	AKSELI	Finland	Finnish Work Environment Fund	99 low-back pain pts, 61 healthy controls	4%	inpatient
Luoto 1998 ¹⁷⁴	AKSELI	Finland	Finnish Work Environment Fund	99 low-back pain pts, 61 healthy controls	4%	inpatient
Lynch 1996 ¹⁷⁵	University Hospital Rehabilitation Center at University of Wisconsin-Madison*	USA	Wisconsin Alumni Research Foundation	64 (30 program completers, 34 who never entered or never completed the program)	14 of 30 completers and 12 of 34 non-completers returned follow-up questionnaire	outpatient
Maclaren 2006 ¹⁷⁶	Oasis Occupational Rehabilitation and Pain Management, Morgantown, WV*	USA	none reported	127 completers	~24% of treatment starters dropped out of treatment; of completers, 18 did not have return-to-work data, leaving 127 pts in study	outpatient
Magnusson 2004 ²⁷	Calgary Chronic Pain Centre	Canada	two authors received funding for training from GlaxoSmithKline	52 MPP, 75 pharmacological	5 pharma, 16 MPP (analysis done on 70 pharma, 36 MPP)	outpatient
Man 2007 ¹⁷⁷	Comprehensive Outpatient Pain Engagement, Alice Ho Miu Ling Nethersole Hospital	Hong Kong	none reported	49	4 withdrew from treatment	outpatient
Mangels 2009 ¹⁷⁸	Rehazentrum Bad Pymont Klinik Weser	Germany	Deutsche Rentenversicherung Bund (German Annuity Insurance Association)	363	6%	inpatient
Maruta 1990 ¹⁷⁹	Mayo Clinic: Pain Management Center/ Comprehensive Pain Rehabilitation Center	USA	none reported	249	13%	inpatient

Table D4. Study details (continued)

Citation	Study/Center Name	Country	Funding Source for Study	N	Number of Patients Lost to Followup	Setting (in-patient/out-patient)
Masuda 2005 ⁴⁰	Hattanmaru Hospital	Japan	none reported	46	2	inpatient
Mayer 1994 ¹⁸⁰	PRIDE*	USA	none reported	194	not reported	outpatient
Mayer 1998 ⁷⁵	PRIDE*	USA	none reported	448	2%-3%	outpatient
Mayer 2001 ¹⁸¹	PRIDE*	USA	partial NIH	1052	?	outpatient
Mayer 2006 ¹⁸²	PRIDE	USA	none	2729	none (partial available on all-- e.g., from insurance companies family, etc.); full interview on 93%	outpatient
Mayer 1986 ¹⁸³	PRIDE	USA	none reported	73 started, 66 completed PRIDE program; comparison group of 74 pts from a nearby "traditional multidisciplinary program"	12 not retested for functional capacity	outpatient
Mayer 1987 ¹⁸⁴	PRIDE	USA	none reported	116 treatment completers, 72 comparison group (denied entry by insurance carrier), 11 treatment non-completers	physical testing completed at 3- and 6-mo on 81 and 56 pts only; no info on interview completion at 1 and 2 yr f/u	outpatient
Mayer 1988 ¹⁸⁵	PRIDE	USA	none reported	100	none reported	outpatient
Mayer 2002 ¹⁸⁶	PRIDE*	USA	no commercial funding	202 (52 surgical, 150 comparison)	5-7% have incomplete data, some f/u data available on all pts in study	outpatient
Mayer 2008 ¹⁸⁷	PRIDE*	USA	none	2730	365 dropped out of treatment; partial info available on them	outpatient
McCracken 2005 ¹⁸⁸	Royal National Hospital for Rheumatic Diseases, Bath	UK	NHS Trust at hospital; West Virginia University	108	13 withdrew from treatment, 21 were missing baseline, pre, or post data; 24 were missing 3-mo	residential or inpatient-hospital

Table D4. Study details (continued)

Citation	Study/Center Name	Country	Funding Source for Study	N	Number of Patients Lost to Followup	Setting (in-patient/out-patient)
Michaelson 2004 ¹⁸⁹	Saxnäsårdens Rehabilitation Center	Sweden	VINNOVA	315	f/u data (leaving 108 with 3 out of data points and 84 with complete data) 12 dropped out of treatment, 68 unavailable at 12-mo f/u	inpatient
Middaugh 1988 ¹⁹⁰	Medical University of South Carolina, Charleston*	USA	partial NIH, partial Med U SC	37	2 pts (2 older pts not reached at 6 or 12 months; younger cohort was 20 consecutive pts with 1-yr follow-up available)	inpatient or outpatient
Mohler 1991 ¹⁹¹	Cardinal Hill Hospital, Lexington KY*	USA	none reported	17	of original 25, 2 withdrew from treatment and 6 were unavailable for follow-up	outpatient
Moore 1986 ²⁴	Harry S Truman Memorial Veterans Hospital*	USA	none reported	57	0	inpatient
Norrefalk 2005 ¹⁹²	Pain Unit, Department of Rehabilitation Medicine, Huddinge University Hospital	Sweden	None reported	72 enrolled in program, 14 pts rejected due to lack of space	5 dropped out of treatment	outpatient
Norrefalk 2006 ¹⁹³	Pain Unit, Department of Rehabilitation Medicine, Huddinge University Hospital	Sweden	none reported	67	all pts had at least partial f/u data	outpatient
Norrefalk 2007 ¹⁹⁴	Pain Unit, Department of Rehabilitation Medicine, Huddinge University Hospital	Sweden	N/A	149 intervention / 79 control	27	outpatient
Norrefalk 2008 ¹⁹⁵	Pain Unit, Department of Rehabilitation Medicine, Huddinge University Hospital	Sweden	none reported	67 treated plus 67 matched comparison group	all pts had at least partial f/u data	outpatient
Olason 2004 ¹⁹⁶	Reykjalaundur Rehabilitation Center	Iceland	none reported	158	not reported	inpatient

Table D4. Study details (continued)

Citation	Study/Center Name	Country	Funding Source for Study	N	Number of Patients Lost to Followup	Setting (in-patient/out-patient)
Patrick 2004 ¹⁹⁷	Low Back Rehabilitation Program, Spine Diagnostic and Treatment Center, Dept of Orthopaedic Surgery, University of Iowa Hospitals and Clinics	USA	U of Iowa, no commercial funding	45	19	inpatient
Perry 2010 ⁷⁷	Royal North Shore Hospital, Sydney: ADAPT/SpinalADAPT	Australia	none reported	36	6 total (all from treatment arm: 1 withdrew from treatment, 1 withdrew from f/u at 1-m, 4 unavailable/unable to complete at 9 mo. f/u)	outpatient
Pfingsten 1997 ⁷⁴	University of Göttingen*	Germany	German Ministry of Education, Research and Technology	90	3 pts not reached at 12-mo f/u	outpatient
Polatin 1989 ¹⁹⁸	PRIDE	USA	none reported	326	N/A (looked at pre-treatment variables for different groups)	outpatient
Polatin 1997 ¹⁹⁹	PRIDE*	USA	partial NIH	50	N/A (used only treatment completers)	outpatient
Proctor 2004 ²⁰⁰	PRIDE	USA	partial NIH	1316	all pts had at least partial f/u data	outpatient
Proctor 2005 ²⁰¹	PRIDE*	USA	partial NIH	1440	6% of completers and 15% of non-completers had no 1-yr f/u data; all others had at least partial data	outpatient
Protas 2004 ²⁰²	PRIDE*	USA	partial NIH	683	not reported	outpatient
Rainville 1992 ²⁰³	Unknown-USA	USA	none noted	40	0	outpatient
Rainville 1993 ²⁰⁴	Unknown-USA	USA	None noted	72	20 pts did not enroll, 10 pts initiated treatment but dropped out (these 30 are the comparison group)	outpatient
Robbins 2003 ³⁸	Eugene McDermott Center for Pain	USA	partial NIH and Sid Richardson	127 completers	62	outpatient (?) not specified

Table D4. Study details (continued)

Citation	Study/Center Name	Country	Funding Source for Study	N	Number of Patients Lost to Followup	Setting (in-patient/out-patient)
	Management, University of Texas Southwestern Medical Center at Dallas		Foundation			
Rome 2004 ²⁰⁵	Mayo Clinic: Pain Management Center/Comprehensive Pain Rehabilitation Center	USA	not reported	356	14% dropped out of treatment, further 8.7% completed treatment but didn't complete pre-post questionnaires	outpatient
Sanders 1993 ²⁰⁶	Pain Control and Rehabilitation Institute of Georgia	USA	none reported	180	13% dropped out of treatment; of completers, 120 randomly selected for follow-up assessment, of which 90 completed follow-up assessment	outpatient
Scerri 2006 ²⁰⁶	Unknown-Switzerland	Switzerland	none reported	88	0	not reported, assumed outpatient based on hours of treatment per week
Scharff 1994 ²⁵	Pain Evaluation and Treatment Institute, University of Pittsburgh Medical Center	USA	grant from Raymond and Elizabeth Bloch Educational and Charitable Foundation	35 treated patients, 31 decliners	3 treatment dropouts, 8 treatment decliners	outpatient
Skinner 1990 ²⁰⁷	Whittington Hospital	UK	NE Thames Regional Health Authority	39	5	outpatient
Skouen 2002 ²⁰⁸	Bergen/Haukeland University	Norway	Royal Norwegian Ministry of Health and Social Affairs	195	3 dropped out of treatment, several were government workers (no return-to-work data available)	outpatient
Skouen 2006 ²⁹	Bergen/Haukeland University	Norway	Royal Norwegian Ministry of Health and Social Affairs	219	4 dropped out of treatment, 7 were government workers with no return-to-work data (leaving 208 with f/u)	outpatient
Snow 1988 ²⁰⁹	Orthopaedic Arthritis Pain Center at the	USA	none reported	200	38%	inpatient and outpatient

Table D4. Study details (continued)

Citation	Study/Center Name	Country	Funding Source for Study	N	Number of Patients Lost to Followup	Setting (in-patient/out-patient)
	Hospital for Joint Diseases Orthopaedic Institute					
Snow 1990 ²¹⁰	Orthopaedic Arthritis Pain Center at the Hospital for Joint Diseases Orthopaedic Institute	USA	none	1	N/A	inpatient and outpatient
Spinhoven 2004 ²¹¹	Hoensbroeck Rehabilitation Center	Netherlands	none reported	148	19 dropped out during treatment, 16 lost during follow-up, 5 lost during waiting periods for a total of 40 lost out of 148	inpatient and outpatient
Stans 1989 ²¹²	Louvain Pain Clinic	Belgium	none reported	35	11	inpatient and outpatient
Serner 2001 ²¹³	University Hospital of Northern Sweden, Umeå, and University Hospital, Linköping	Sweden	Swedish National Board of Health and Welfare	88	24	outpatient
Storro 2004 ²¹⁴	Clinic of Physical Medicine 3T	Norway	partial support from Norwegian Research Council	121 treatment/97 control	None; however, 5 intervention pts dropped out of the intervention program (follow-up info still collected), one dropped out due to improved condition and returned to work	outpatient
Suman 2009 ²⁰	Siena University*	Italy	Ministero dell'Istruzione, dell'Università e della Ricerca, Rome, Italy, and PAR (University of Siena)	25	0	residential (hotel near hospital for weekdays, home on weekends)
Suoyrjo 2008 ²¹⁵	Finnish Ten-Town Study	Finland	Social Insurance Institution of Finland, Academy of Finland, Finnish Work Environment Fund, participating towns	613 rehab participants compared to 34,000 non-rehab participants	some pts were followed for 10 years (250 back pain, 133 neck pain, 23,379 non-rehab)	inpatient
Tollison 1985 ²¹⁶	Pain Therapy Center, Greenville, SC	USA	none reported	100	17	inpatient

Table D4. Study details (continued)

Citation	Study/Center Name	Country	Funding Source for Study	N	Number of Patients Lost to Followup	Setting (in-patient/out-patient)
Tollison 1989 ²¹⁷	Pain Therapy Center, Greenville, SC	USA	none reported	30	5	inpatient
Tollison 1990 ²¹⁸	Pain Therapy Center, Greenville, SC	USA	none noted	30	1	inpatient
Trief 1995 ²¹⁹	SUNY Syracuse	USA	none noted	48	?	outpatient
Turk 1998 ¹²	Pain Evaluation and Treatment Institute, University of Pittsburgh Medical Center*	USA	partial Arthritis Foundation -- Western PA chapter	70	8% didn't complete treatment; of 70 who did, 3 had incomplete data and were excluded from analysis; at six-month follow-up, 38 completed questionnaires	outpatient
Turner-Stokes 2003 ⁷⁶	COPE program, London	UK	Medical Research Council and Luff Foundation	126 randomized, 66 completed group therapy, 47 completed individual therapy	13 dropped out during treatment, 29 did not attend 1-yr f/u (data available for 84)	outpatient
van Wilgen 2009 ²²⁰	University Medical Centre Groningen	Netherlands	none reported	32	6	inpatient
Vendrig 1999 ²²¹	Rug AdviesCentra Nederland	Netherlands	none reported	143	4	outpatient
Vendrig 2000 ²²²	Rug AdviesCentra Nederland	Netherlands	N/A	120	Not given; 2 pts excluded for invalid MMPI validity scores	outpatient
Vendrig 2000 ²²³	Rug AdviesCentra Nederland	Netherlands	none reported	26	?	outpatient
Verra 2009 ²²	RehaClinic, Bad Zurzach	Switzerland	Zurzach Rehabilitation Foundation SPA	118	?	inpatient
Vines 1996 ²²⁴	Maine Pain Center*	USA	None noted	23	?	outpatient
Vines 2000 ²²⁵	Maine Pain Center*	USA	None noted	23	?	outpatient
Vollenbroek-Hutten 2004 ²²⁶	Roessingh Back Rehabilitation Programme	Netherlands	None reported	163	10 treatment, 11 control	outpatient
Vowles 2004 ²²⁷	Oasis Occupational Rehabilitation and Pain Management, Morgantown, WV*	USA	none reported	183	45 pts did not complete treatment (of the initial 183 treatment starters)	outpatient

Table D4. Study details (continued)

Citation	Study/Center Name	Country	Funding Source for Study	N	Number of Patients Lost to Followup	Setting (in-patient/out-patient)
Vowles 2007 ²²⁸	Royal National Hospital for Rheumatic Diseases, Bath*	UK	none reported	252	24 pts dropped out of treatment; 191 of 252 treatment completers had 3-mo f/u data	residential?
Vowles 2008 ²²⁹	Royal National Hospital for Rheumatic Diseases, Bath	UK	none reported	171	16 pts dropped out of treatment; 114 of 171 treatment completers had 3-mo f/u data	residential
Vowles 2010 ²³⁰	Royal National Hospital for Rheumatic Diseases, Bath*	UK	none reported	114	16 pts dropped out of treatment; 114 of 171 treatment completers had 3-mo f/u data	residential
Walsh 2002 ²³¹	King's Mill Hospital Back Pain Unit	UK	none reported	84	6% attrition during program, 12% attrition between completion and 3-mo f/u	outpatient
Walsh 2004 ²³²	King's Mill Hospital Back Pain Unit	UK	N/A (no commercial funding)	101	30 [attrition from program is 4%]	outpatient
Wang 2008 ⁴⁷	University of Heidelberg	Germany	none reported	120 pain patients matched to 120 health controls	?	inpatient
Wasan 2004 ²³³	Chronic Pain Treatment Service, Johns Hopkins Hospital Department of Psychiatry and Behavioral Sciences	USA	lead author is a Pfizer postdoctoral fellow in pain medicine	25 pts MPP + ECT, 25 matched pts MPP only	3 ECT patients were not matched	inpatients
Williams 1993 ²³⁴	INPUT, St. Thomas' Hospital, London	UK	INPUT unit funding from Kind Edward's Hospital Fund for London, regional health authority, etc.	212	of 243 inpatients, 23 dropped out, 3 discharged early, 5 gave incomplete data due to language/literacy leaving before/after data for 212; of these, 15 were missing 1-mo f/u; 118 pts had 6 mo f/u data	inpatient

Table D4. Study details (continued)

Citation	Study/Center Name	Country	Funding Source for Study	N	Number of Patients Lost to Followup	Setting (in-patient/out-patient)
Williams 1999 ⁴⁹	INPUT, St. Thomas' Hospital, London	UK	INPUT unit funding from Kind Edward's Hospital Fund for London, regional health authority, etc.	121 randomized; compared with 128 who didn't agree to randomization; waiting list control of 30 (out of the 121 randomized)	11 (all treatment condition) lost b/w assignment and admission; 38 did not complete 1-mo f/u; 90 did not complete 12-mo f/u	both
Wong 2009 ²³⁵	Cannock Chase Hospital	UK	none reported	70	93 of 163 completers	outpatient
Wormgoor 2008 ²³⁶	Kysthospital, Vestfold (now called Hospital for Rehabilitation -- Stavern, Rikshospitalet Medical Centre)	Norway	none reported	94	24 of 118 were not available at 6-mo f/u	inpatient
Wright 1999 ²³⁷	PRIDE*	USA	none reported	1198 (421 with cervical spine disorders, 777 with lumbar spine disorders)	119 did not complete treatment: only pre-treatment data available; for completers, 98% have at least partial follow-up data	outpatient
Zunin 2009 ²³⁸	Integrative Healthcare Group & Rehabilitative Center, Honolulu	USA	HMSA and ZEIR	35	?	outpatient

Table D5. Study designs

Citation	Study Testing	Comparison Treatment? (MPP, non-MPP, False)	Comparison Treatment Assigned Randomly?	Comparison group? (as a design feature)	Prospective or Retrospective
Alaranta 1994 ⁹¹	treatment	Non-MPP	FALSE	FALSE	prospective
Altmaier 1992 ⁹²	treatment	Non-MPP	TRUE	FALSE	prospective
Andary 1997 ⁹³	patient characteristics: predictive	N/A	N/A	comorbidity	Retrospective
Angst 2006 ¹⁸	treatment	N/A	N/A	diagnosis/pain location	prospective
Angst 2009 ²¹	treatment	Non-MPP	FALSE	FALSE	prospective
Bailey 2003 ⁹⁴	predictors	N/A	N/A	patient history	prospective
Bendix 1998 ⁹⁵	treatment	non-MPP and no treatment	TRUE	FALSE	prospective
Bendix 1995 ⁸¹	treatment	Non-MPP	TRUE	FALSE	prospective
Bendix 1996 ⁴³	treatment	No treatment	TRUE	FALSE	prospective
Bendix 1997 ⁷⁹	treatment	non-MPP	TRUE	FALSE	prospective
Bendix 1998 ⁹⁶	patient characteristics: predictive	non-MPP and no treatment	FALSE	FALSE	prospective
Bendix 1998 ⁹⁷	treatment	Non-MPP	TRUE	FALSE	prospective
Bendix 2000 ⁷⁸	treatment	Non-MPP	TRUE	FALSE	prospective
Bliokas 2007 ⁹⁸	treatment/treatment component	MPP and waiting list	TRUE	FALSE	prospective
Buchner 2006 ⁹⁹	treatment	N/A	N/A	diagnosis/pain location	Prospective
Buchner 2007 ¹⁰⁰	patient characteristics: predictive	N/A	N/A	age	Prospective
Buchner 2007 ¹⁰¹	patient characteristics: predictive	N/A	N/A	chronicity	prospective
Burnham 2010 ²³	treatment	N/A	N/A	FALSE	prospective
Burns 2000 ¹⁰²	predictors	N/A	N/A	cognitive/psychological	secondary analysis
Burns 1998 ¹⁰³	predictors	N/A	N/A	cognitive/psychological and sex	secondary analysis
Burns 1998 ¹⁰⁴	predictors	N/A	N/A	cognitive/psychological and physical	secondary analysis
Burns 2003 ¹⁰⁵	intervention mechanisms (cognitive)	N/A	N/A	cognitive/psychological	secondary analysis
Burns 2003 ¹⁰⁶	intervention mechanisms (cognitive)	N/A	N/A	cognitive/psychological	secondary analysis
Burns 2005 ¹⁰⁷	intervention mechanisms (cognitive)	N/A	N/A	cognitive/psychological	secondary analysis
Carleton 2010 ¹⁰⁸	patient characteristics: predictive	N/A	N/A	diagnosis/pain location	Retrospective
Cassisi 1989 ¹⁰⁹	treatment	usual care	FALSE	FALSE	retrospective?

Table D5. Study designs (continued)

Citation	Study Testing	Comparison Treatment? (MPP, non-MPP, False)	Comparison Treatment Assigned Randomly?	Comparison group? (as a design feature)	Prospective or Retrospective
Cedraschi 2004 ¹⁶	treatment	waiting list	TRUE	FALSE	prospective
Chapman 1990 ¹¹⁰	patient characteristics	N/A	N/A	cognitive/psychological	secondary analysis
Chapman 1994 ¹¹¹	predictors	N/A	N/A	cognitive/psychological	?follow-up questionnaire
Chapman 1996 ¹¹²	instrument validation	N/A	N/A	FALSE	prospective?
Chapman 2000 ⁵⁰	cost effectiveness	MPP (some outcomes given by treatment center; treatment details varied somewhat among the centers, though all qualify as MPPs)	FALSE	FALSE	prospective?
Ciechanowski 2003 ¹¹³	patient characteristics: predictive	N/A	N/A	cognitive/psychological	secondary analysis
Connally 1991 ¹¹⁴	patient characteristics: predictive	N/A	N/A	cognitive/psychological, behavioral	prospective
Cott 1990 ¹¹⁵	treatment	MPP	FALSE	FALSE	prospective
Crisostomo 2008 ¹¹⁶	treatment component	N/A	N/A	surgical history	retrospective
Currie 2003 ¹⁵	treatment	N/A	N/A	FALSE	prospective
Davis 1992 ¹¹⁷	treatment	N/A	N/A	FALSE	prospective
Deardorff 1991 ⁷³	treatment	No treatment	FALSE	FALSE	prospective
Demoulin 2010 ¹¹⁸	treatment	waiting list	unknown	FALSE	prospective
Dersh 2008 ¹¹⁹	predictors	N/A	N/A	comorbidity (opioid dependency)	prospective
Doleys 1986 ¹²⁰	patient characteristics	N/A	N/A	narcotic use pre- treatment	prospective
Dunstan 2007 ¹²¹	treatment	N/A	N/A	FALSE	prospective
Dysvik 2004 ¹²²	treatment	N/A	N/A	FALSE	prospective?
Dysvik 2005 ¹²³	treatment	N/A	N/A	FALSE	prospective?
Edwards 2003 ¹²⁴	patient characteristics: predictive	N/A	N/A	behavioral, sex	prospective?
Elkayam 1996 ¹²⁵	treatment	N/A	N/A	FALSE	prospective
Elkayam 1996 ¹²⁶	measurement validity	N/A	N/A	CT findings	prospective?

Table D5. Study designs (continued)

Citation	Study Testing	Comparison Treatment? (MPP, non-MPP, False)	Comparison Treatment Assigned Randomly?	Comparison group? (as a design feature)	Prospective or Retrospective
Ersek 2008 ¹²⁷	treatment	Non-MPP	TRUE	FALSE	prospective
Evans 2001 ¹²⁸	patient characteristics: predictive	N/A	N/A	recurrent injury vs. non- recurrent injury	prospective
Feuerstein 1993 ¹²⁹	treatment	usual care	FALSE	FALSE	prospective
Fishbain 2005 ¹³⁰	treatment	N/A	N/A	FALSE	Data collected prospectively
Flavell 1996 ¹³¹	treatment	N/A	N/A	FALSE	retrospective
France 1991 ¹³²	patient characteristics	N/A	N/A	biomedical (CSF levels of Beta-Endorphins)	prospective
Fricton 1996 ¹³³	patient characteristics (psychosocial, demographic): predictive	N/A	N/A	FALSE	prospective
Gagnon 2009 ¹³⁴	treatment	N/A	N/A	FALSE	748
Garcy 1996 ¹³⁵	treatment, prevention/prediction of recurrence	N/A	N/A	FALSE	prospective
Gatchel 1986 ¹³⁶	instrument validation, patient characteristics	N/A	N/A	FALSE	Data collected prospectively
Gatchel 1986 ¹³⁷	instrument utility, patient characteristics	N/A	N/A	FALSE	Data collected prospectively
Gatchel 1994 ¹³⁸	patient characteristics: predictive	N/A	N/A	cognitive/psychological	prospective
Gatchel 1999 ¹³⁹	patient characteristics: predictive	N/A	N/A	FALSE	"prospectively selected"
Gatchel 2002 ¹⁴⁰	instrument utility, patient characteristics	N/A	N/A	FALSE	prospective
Gatchel 2005 ¹⁴¹	patient characteristics	N/A	N/A	sex, social characteristics (marriage, children)	Data collected prospectively
Gatchel 2009 ⁹⁰	Treatment	usual care	TRUE	FALSE	prospective
Gatchel 2010 ¹⁴²	measurement validity	N/A	N/A	FALSE	prospective
Glenn 2003 ¹⁴³	intervention mechanisms (cognitive)	N/A	N/A	FALSE	Data collected prospectively
Gross 2005 ¹⁴⁴	Predictors	N/A	N/A	FALSE	retrospective
Guck 1988 ¹⁴⁵	patient characteristics: predictive	N/A	N/A	FALSE	Data collected prospectively
Guck 1999 ⁸⁰	instrument validation	N/A	N/A	FALSE	Data collected prospectively
Gunreben- Stempfle 2009 ²⁸	treatment	non-MPP and no treatment (not concurrent)	FALSE	FALSE	retrospective

Table D5. Study designs (continued)

Citation	Study Testing	Comparison Treatment? (MPP, non-MPP, False)	Comparison Treatment Assigned Randomly?	Comparison group? (as a design feature)	Prospective or Retrospective
Gustafsson 2002 ¹³	treatment	waiting list	FALSE	FALSE	Prospective
Hatten 2006 ¹⁴⁶	cost effectiveness	MPP, non-MPP	FALSE	FALSE	retrospective
Hazard 1989 ¹⁴⁷	treatment	No treatment and crossover	FALSE	FALSE	prospective
Hazard 1991 ¹⁴⁸	patient characteristics: predictive	N/A	N/A	FALSE	Data collected prospectively
Hazard 2009 ¹⁴⁹	measurement validity	N/A	N/A	FALSE	prospective
Hildebrandt 1997 ¹⁵⁰	patient characteristics: predictive	N/A	N/A	FALSE	prospective
Hooten 2007 ¹⁹	treatment	N/A	N/A	FALSE	prospective
Hooten 2009 ¹⁵¹	predictors	N/A	N/A	sex, smoking	retrospective
Hooten 2009 ¹⁵²	predictors	N/A	N/A	smoking	retrospective
Howard 2009 ¹⁵³	patient characteristics	N/A	N/A	behavioral (presenteeism)	Data collected prospectively
Huge 2006 ¹⁵⁴	treatment	assessment, no treatment	FALSE	matched controls	retrospective
Jensen 1995 ¹⁵⁵	treatment component, cost effectiveness	non-MPP	0	FALSE	Prospective
Jensen 1994 ¹⁵⁶	treatment	No treatment	FALSE	matched controls	prospective
Jensen 1998 ¹⁵⁷	treatment	No treatment	FALSE	matched controls	prospective
Jensen 1992 ¹⁵⁸	instrument validation	N/A	N/A	FALSE	prospective
Jensen 1994 ¹⁵⁹	intervention mechanisms (cognitive)	N/A	N/A	FALSE	prospective
Jensen 2001 ¹⁶⁰	intervention mechanisms (cognitive)	N/A	N/A	FALSE	prospective
Jensen 2003 ¹⁴	patient characteristics: predictive	MPP (some outcomes given by treatment center; treatment details varied somewhat among the centers, though all qualify as MPPs)	FALSE	cognitive/psychological	prospective
Jensen 2004 ¹⁷	patient characteristics: predictive	MPP (some outcomes given by treatment center; treatment details varied somewhat among the centers, though all qualify as MPPs)	FALSE	cognitive/psychological	prospective
Jensen 2007 ¹⁶¹	intervention mechanisms (cognitive)	N/A	N/A	cognitive/psychological	prospective
Jousset 2004 ¹⁶²	treatment	Non-MPP	TRUE	FALSE	prospective
Kaapa 2006 ¹⁶³	treatment	Non-MPP	TRUE	FALSE	prospective
Kenny 2004 ¹⁶⁴	treatment component	MPP	TRUE	FALSE	prospective

Table D5. Study designs (continued)

Citation	Study Testing	Comparison Treatment? (MPP, non-MPP, False)	Comparison Treatment Assigned Randomly?	Comparison group? (as a design feature)	Prospective or Retrospective
Keogh 2005 ¹⁶⁵	patient characteristics: predictive	N/A	N/A	sex	prospective
Kidner 2009 ¹⁶⁶	patient characteristics: predictive	N/A	N/A	opioid use pre-treatment	"prospectively assessed"
Kleinke 1988 ¹⁶⁷	instrument validation	N/A	N/A	FALSE	prospective
Kohles 1990 ¹⁶⁸	treatment	MPP (not concurrent)	FALSE	FALSE	Data collected prospectively
Kole-Snijders 1999 ¹⁶⁹	treatment component	MPP, waiting list	TRUE	FALSE	prospective
Koopman 2004 ¹⁷⁰	treatment	N/A	N/A	FALSE	Prospective
Lang 2003 ¹⁷¹	treatment	usual care	FALSE	FALSE	prospective
Law 2009 ¹⁷²	treatment component	MPP	TRUE	FALSE	prospective
Lipchik 1993 ⁴⁸	treatment, intervention mechanism	non-MPP	FALSE	FALSE	prospective
Luoto 1996 ¹⁷³	intervention mechanisms (physical)	N/A	N/A	healthy controls	prospective
Luoto 1998 ¹⁷⁴	intervention mechanisms (physical)	N/A	N/A	healthy controls	prospective
Lynch 1996 ¹⁷⁵	treatment	No treatment and non- completers	FALSE	FALSE	retrospective
Maclaren 2006 ¹⁷⁶	patient characteristics: predictive	N/A	N/A	opioid use pre-treatment	prospective
Magnusson 2004 ²⁷	treatment	non-MPP	FALSE	FALSE	prospective
Man 2007 ¹⁷⁷	treatment	N/A	N/A	FALSE	prospective
Mangels 2009 ¹⁷⁸	treatment	non-MPP	TRUE	FALSE	prospective
Maruta 1990 ¹⁷⁹	treatment	N/A	N/A	FALSE	Data collected prospectively
Masuda 2005 ⁴⁰	treatment component	MPP	0	FALSE	prospective
Mayer 1994 ¹⁸⁰	patient characteristics: predictive	N/A	N/A	sex, surgical status	Prospective
Mayer 1998 ⁷⁵	patient characteristics: predictive	MPP	FALSE	surgical history, matched controls	"prospectively evaluated"
Mayer 2001 ¹⁸¹	patient characteristics: predictive	N/A	N/A	age	prospective
Mayer 2006 ¹⁸²	patient characteristics: predictive	N/A	N/A	obesity	prospective
Mayer 1986 ¹⁸³	measurement validity	MPP?	FALSE	FALSE	Prospective

Table D5. Study designs (continued)

Citation	Study Testing	Comparison Treatment? (MPP, non-MPP, False)	Comparison Treatment Assigned Randomly?	Comparison group? (as a design feature)	Prospective or Retrospective
Mayer 1987 ¹⁸⁴	treatment	No treatment and non-completers	FALSE	FALSE	Prospective
Mayer 1988 ¹⁸⁵	measurement validity	N/A	N/A	FALSE	prospective
Mayer 2002 ¹⁸⁶	treatment	MPP	0	surgical history	prospective
Mayer 2008 ¹⁸⁷	patient characteristics	N/A	N/A	comorbidity	prospective
McCracken 2005 ¹⁸⁸	treatment	waiting list	FALSE	FALSE	Prospective
Michaelson 2004 ¹⁸⁹	patient characteristics: predictive	N/A	N/A	diagnosis/pain location	prospective
Middaugh 1988 ¹⁹⁰	patient characteristics: predictive	N/A	N/A	age	prospective
Mohler 1991 ¹⁹¹	treatment	N/A	N/A	FALSE	prospective
Moore 1986 ²⁴	patient characteristics: predictive	N/A	N/A	FALSE	prospective
Norrefalk 2005 ¹⁹²	patient characteristics: predictive	No treatment	FALSE	FALSE	prospective
Norrefalk 2006 ¹⁹³	patient characteristics: predictive	N/A	N/A	ethnicity	Data collected prospectively
Norrefalk 2007 ¹⁹⁴	treatment	treatment as usual	FALSE	FALSE	prospective
Norrefalk 2008 ¹⁹⁵	treatment, cost effectiveness	treatment as usual	FALSE	matched controls	prospective
Olason 2004 ¹⁹⁶	treatment	N/A	N/A	FALSE	prospective
Patrick 2004 ¹⁹⁷	treatment	non-MPP	FALSE	FALSE	Prospective
Perry 2010 ⁷⁷	treatment	usual care	FALSE	FALSE	prospective
Pfingsten 1997 ⁷⁴	treatment	N/A	N/A	FALSE	prospective
Polatin 1989 ¹⁹⁸	patient characteristics: predictive	No treatment and non-completers	FALSE	matched controls	Data collected prospectively
Polatin 1997 ¹⁹⁹	predictors	N/A	N/A	behavioral (Waddell signs)	Prospective
Proctor 2004 ²⁰⁰	patient characteristics: predictive	N/A	N/A	FALSE	prospective
Proctor 2005 ²⁰¹	patient characteristics: predictive	N/A	N/A	non-completers	Prospective
Protas 2004 ²⁰²	measurement validity	N/A	N/A	FALSE	prospective
Rainville 1992 ²⁰³	patient characteristics	No treatment and non-completers	FALSE	FALSE	prospective
Rainville 1993 ²⁰⁴	intervention mechanisms (cognitive)	No treatment and non-completers	FALSE	FALSE	prospective

Table D5. Study designs (continued)

Citation	Study Testing	Comparison Treatment? (MPP, non-MPP, False)	Comparison Treatment Assigned Randomly?	Comparison group? (as a design feature)	Prospective or Retrospective
Robbins 2003 ³⁸	treatment	Non-MPP (pts may not have actually received PT elsewhere)	FALSE	FALSE	Prospective
Rome 2004 ²⁰⁵	patient characteristics: predictive	N/A	N/A	opioid use pre-treatment	retrospective
Sanders 1993 ²⁶	patient characteristics: predictive	N/A	N/A	FALSE	prospective
Scerri 2006 ²⁰⁶	instrument utility, patient characteristics	N/A	N/A	cognitive/psychological, behavioral, radiographic abnormalities	Data collected prospectively
Scharff 1994 ²⁵	treatment	No treatment	FALSE	FALSE	prospective
Skinner 1990 ²⁰⁷	treatment	N/A	N/A	FALSE	prospective
Skouen 2002 ²⁰⁸	treatment, treatment component	non-MPP and no treatment	TRUE	FALSE	prospective
Skouen 2006 ²⁹	treatment, treatment component, patient characteristics (predictive)	non-MPP and no treatment	TRUE	FALSE	prospective
Snow 1988 ²⁰⁹	treatment	N/A	N/A	FALSE	prospective
Snow 1990 ²¹⁰	treatment	N/A	N/A	FALSE	N/A
Spinhoven 2004 ²¹¹	intervention mechanisms (cognitive)	MPP, waiting list	TRUE	FALSE	prospective
Stans 1989 ²¹²	treatment	N/A	N/A	FALSE	prospective
Sterner 2001 ²¹³	treatment	N/A	N/A	FALSE	prospective
Storro 2004 ²¹⁴	treatment	usual care	FALSE	diagnosis/pain location	prospective
Suman 2009 ²⁰	treatment	N/A	N/A	FALSE	prospective
Suoyrjo 2008 ²¹⁵	treatment	No treatment	FALSE	non-rehab, diagnosis/pain location	prospective
Tollison 1985 ²¹⁶	treatment	N/A	N/A	FALSE	prospective
Tollison 1989 ²¹⁷	treatment	N/A	N/A	acute vs. chronic pain	prospective
Tollison 1990 ²¹⁸	patient characteristics: predictive	N/A	N/A	compensated vs. noncompensated	prospective
Trief 1995 ²¹⁹	patient characteristics: predictive	N/A	N/A	FALSE	prospective
Turk 1998 ¹²	treatment	N/A	N/A	FALSE	prospective
Turner-Stokes 2003 ⁷⁶	treatment	Non-MPP	TRUE	FALSE	prospective
van Wilgen 2009 ²²⁰	treatment	waiting list period	FALSE	FALSE	prospective
Vendrig 1999 ²²¹	patient characteristics: predictive	N/A	N/A	FALSE	prospective

Table D5. Study designs (continued)

Citation	Study Testing	Comparison Treatment? (MPP, non-MPP, False)	Comparison Treatment Assigned Randomly?	Comparison group? (as a design feature)	Prospective or Retrospective
Vendrig 2000 ²²²	patient characteristics: predictive	N/A	N/A	FALSE	prospective
Vendrig 2000 ²²³	treatment	N/A	N/A	FALSE	prospective
Verra 2009 ²²	patient characteristics: predictive	N/A	N/A	FALSE	prospective
Vines 1996 ²²⁴	treatment	N/A	N/A	FALSE	prospective
Vines 2000 ²²⁵	treatment	N/A	N/A	FALSE	prospective
Vollenbroek- Hutten 2004 ²²⁶	instrument utility, patient characteristics	usual care	0	cognitive/psychological	prospective
Vowles 2004 ²²⁷	patient characteristics: predictive	N/A	N/A	FALSE	prospective
Vowles 2007 ²²⁸	intervention mechanisms (cognitive)	N/A	N/A	FALSE	prospective
Vowles 2008 ²²⁹	intervention mechanisms (cognitive)	N/A	N/A	FALSE	prospective
Vowles 2010 ²³⁰	intervention mechanisms (cognitive)	N/A	N/A	FALSE	prospective
Walsh 2002 ²³¹	patient characteristics: predictive	N/A	N/A	FALSE	prospective
Walsh 2004 ²³²	measurement validity	N/A	N/A	FALSE	prospective
Wang 2008 ⁴⁷	patient characteristics: predictive	N/A	N/A	healthy controls, TNF- alpha levels	prospective
Wasan 2004 ²³³	treatment (ECT)	MPP	FALSE	matched controls (non- ECT)	retrospective
Williams 1993 ²³⁴	treatment	N/A	N/A	FALSE	prospective
Williams 1999 ⁴⁹	study design validation	MPP, waiting list	Partially	randomized vs. did not consent to randomization	retrospective?
Wong 2009 ²³⁵	treatment	N/A	N/A	FALSE	prospective
Wormgoor 2008 ²³⁶	patient characteristics: predictive	N/A	N/A	diagnosis/pain location	prospective
Wright 1999 ²³⁷	patient characteristics: predictive	N/A	N/A	diagnosis/pain location	Prospective
Zunin 2009 ²³⁸	treatment	N/A	N/A	FALSE	prospective