Effective Health Care Program

Technical Brief
Number 8

Multidisciplinary Pain Programs for Chronic Noncancer Pain

AHRQ
Agency for Healthcare Research and Quality
Advancing Excellence in Health Care • www.ahrq.gov

Technical Brief

Number 8

Multidisciplinary Pain Programs for Chronic Noncancer Pain

Prepared for:
Agency for Healthcare Research and Quality
U.S. Department of Health and Human Services
540 Gaither Road
Rockville, MD 20850
www.ahrq.gov

Contract No. 290-07-10064-I

Prepared by:
Minnesota Evidence-based Practice Center
Minneapolis, MN

Investigators:
Molly Moore Jeffery, M.P.P.
Mary Butler, M.B.A., Ph.D.
Alice Stark, R.N., Ph.D.
Robert L. Kane, M.D.

AHRQ Publication No. 11-EHC064-EF
September 2011

This report is based on research conducted by the Minnesota Evidence-based Practice Center under contract to the Agency for Healthcare Research and Quality (AHRQ), Rockville, MD (Contract No. 290-07-10064-I). The findings and conclusions in this document are those of the authors, who are responsible for its content, and do not necessarily represent the views of AHRQ. No statement in this report should be construed as an official position of AHRQ or of the U.S. Department of Health and Human Services.

The information in this report is intended to help clinicians, employers, policymakers, and others make informed decisions about the provision of health care services. This report is intended as a reference and not as a substitute for clinical judgment.

This report may be used, in whole or in part, as the basis for the development of clinical practice guidelines and other quality enhancement tools, or as a basis for reimbursement and coverage policies. AHRQ or U.S. Department of Health and Human Services endorsement of such derivative products may not be stated or implied.

Persons using assistive technology may not be able to fully access information in this report. For assistance contact EffectiveHealthCare@ahrq.hhs.gov.

None of the investigators have any affiliations or financial involvement that conflict with material presented in this report.

Suggested citation: Jeffery MM, Butler M, Stark A, Kane RL. Multidisciplinary Pain Programs for Chronic Noncancer Pain. Technical Brief No. 8. (Prepared by Minnesota Evidence-based Practice Center under Contract No. 290-07-10064-I.) AHRQ Publication No. 11-EHC064-EF. Rockville, MD: Agency for Healthcare Research and Quality. September 2011.

Preface

The Agency for Healthcare Research and Quality (AHRQ), through its Evidence-based Practice Centers (EPCs), sponsors the development of evidence reports and technology assessments to assist public- and private-sector organizations in their efforts to improve the quality of health care in the United States. The reports and assessments provide organizations with comprehensive, science-based information on common, costly medical conditions and new health care technologies and strategies. The EPCs systematically review the relevant scientific literature on topics assigned to them by AHRQ and conduct analyses when appropriate prior to developing their reports and assessments.

This EPC evidence report is a Technical Brief. A Technical Brief is a rapid report, typically on an emerging medical technology, strategy, or intervention—for example, current indications, relevant patient populations and subgroups of interest, outcomes measured, and contextual factors that may affect decisions regarding the intervention. Although 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 decision to request a Technical Brief is not solely based on the availability of clinical studies. The goals of the Technical Brief are to provide an early objective description of the state of the science, a potential framework for assessing the applications and implications of the intervention, a summary of ongoing research, and information on future research needs. In particular, through the Technical Brief, AHRQ hopes to gain insight on the appropriate conceptual framework and critical issues that will inform future comparative effectiveness research.

AHRQ expects that the EPC evidence reports and technology assessments will inform individual health plans, providers, and purchasers as well as the health care system as a whole by providing important information to help improve health care quality.

We welcome comments on this Technical Brief. They may be sent by mail to the Task Order Officer named below at: Agency for Healthcare Research and Quality, 540 Gaither Road, Rockville, MD 20850, or by email to epc@ahrq.hhs.gov.

Carolyn M. Clancy, M.D.
Director
Agency for Healthcare Research and Quality

Jean Slutsky, P.A., M.S.P.H.
Director, Center for Outcomes and Evidence
Agency for Healthcare Research and Quality

Stephanie Chang, M.D., M.P.H.
Director
Evidence-based Practice Program
Center for Outcomes and Evidence
Agency for Healthcare Research and Quality

Suchitra P. Iyer, Ph.D.
Task Order Officer
Center for Outcomes and Evidence
Agency for Healthcare Research and Quality

Multidisciplinary Pain Programs for Chronic Noncancer Pain

Abstract

Background. Chronic noncancer pain affects millions of Americans, seriously impacting their quality of life and costing billions of dollars every year in health care expenditures and lost productivity. There are currently no definitive cures for the most prevalent chronic pain syndromes. Multidisciplinary Pain Programs (MPPs) follow a model of care that emphasizes, when pain cannot be successfully eliminated, managing the pain to the extent that the patient's independence is restored and overall quality of life improved.

Purpose. The purpose of this report is to describe the literature and identify important issues and gaps in the evidence base assessing MPPs for the treatment of chronic noncancer pain.

Methods. A review of the published literature and interviews with key informants were conducted

Findings. MPPs have been extensively documented in the standard medical literature. The 183 papers considered in this Technical 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 than U.S. studies to include inpatient delivery of MPP treatment. Declining access to MPP treatment in the United States is highlighted as a key issue faced by those in the community of chronic pain sufferers and researchers.

Contents

Appendixes

.

Background

Chronic Noncancer 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, noncancer 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.

A widely accepted definition of pain was developed by the International Association for the Study of Pain: pain is "an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage."[4] There is no single standard taxonomy of pain, but distinctions are frequently made between chronic and acute pain and between cancer and noncancer pain. Chronic pain is generally differentiated from acute pain by its duration, with chronic pain lasting longer than some specified time, often 3 or 6 months.[5] Conditions that cause intermittent recurring pain, for example, migraine headaches or sickle-cell anemia, have characteristics of both chronic and acute pain.

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, peripheral neuropathies, etc. The goal of chronic pain treatment has evolved from eliminating pain to managing pain to an extent that the patient's physical and emotional functioning is restored and overall quality of life improved. This is the model of care provided by the Multidisciplinary Pain Program (MPP).[i] There is no single protocol for treatment provided in MPPs, but there is general agreement on some included methods. In addition, and in contrast to other types of pain treatment clinics, MPPs provide interdisciplinary care: providers from each of the components work together to develop the treatment plan. The definition used in this Technical Brief 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 Appendix D.

Other treatment modalities used to treat the many aspects of chronic pain include:[6]

[i]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.

- Pharmacologic treatment, such as nonsteroidal anti-inflammatory drugs, acetaminophen, topical agents, antidepressants (including serotonin/norepinephrine reuptake inhibitors, and tricyclic antidepressants), anticonvulsants, and opioids. One or more of these medications may be indicated, for example, for arthritic, neuropathic or headache pain.
- Physical therapy, including both passive and active therapies.
- Occupational therapy.
- Behavioral/psychological/psychiatric 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: transcutaneous electronic nerve stimulation; trigger point injections, including muscle injections with botulinum toxin (Botox®); prolotherapy; nerve blockade procedures, such as sympathetic block or epidural steroid injections; and acupuncture, and other complementary and alternative medical therapies.
- More invasive medical procedures, including: implantable intrathecal drug delivery systems, spinal cord and peripheral nerve stimulators, image-guided percutaneous spinal procedures, and 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, noncancer 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 opioid painkillers limit quality of life. The pain is no longer a signal of new or impending tissue damage—it becomes a disease in itself, sometimes even after the original physical abnormalities are resolved.[7,8] Chronic pain that continues after the apparent cause is gone is now thought to be a biopsychosocial phenomenon. Though no one knows exactly 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.[7]

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,[9] quoted in Linton[10]). In the case of one disorder—low-back pain—approximately 90 percent of sufferers recover within 3 to 6 months (Mayer and Gatchel,[11] quoted in Garofalo and Polatin[12]), leaving 10 percent experiencing chronic pain; the majority of those still experiencing pain after 6 months remain disabled after 1 and 2 years (Mayer,[13] quoted in Garofalo and Polatin[12]).

When chronic pain does not fully respond to treatment, 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 pattern 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 similar to other chronic pain conditions: they are characterized by patients exhausting more traditional forms of pain treatment, and their prognoses are believed to be influenced by psychological and social factors; for these reasons, conditions like fibromyalgia and chronic headache are believed to be amenable to treatment in

the MPP model. The studies identified in this Brief include trials of multidisciplinary treatment of fibromyalgia,[14-25] headache,[17,26-30] and chronic widespread pain.[15,23,31]

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, noncancer 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 information 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 published studies 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 of 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 noncancer pain:

a. What chronic pain populations (excluding patients with cancer) were included in studies of MPPs?
    1. What clinical conditions were present in the included patients?
    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 treatment 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 noncancer 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 describing the MPP and its clinical indications is less important than it would be with a newer technology, 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. The start 1985 date was chosen since MPPs proliferated in the 1980's, and it was unlikely literature prior to that period would contribute to the report.[32] 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.[33] 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. An update of the search was conducted April 2011; no new literature was found that altered the findings of this report.

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 (MMJ). Other researchers provided advice where design features were unusual or ambiguous (MB, RLK).

Definition of Multidisciplinary Pain Program

We used the following definition of MPP in reviewing studies for inclusion. This definition is consistent with that used in the literature and was refined through discussions with our Key Informants. It 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 component (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) and/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.[34]

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 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.[35] 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 2011.

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.[36] Several authors have outlined possible staffing models for MPPs.[32,37-39] 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 patients with chronic pain, therapists must address both behavioral and emotional sequelae of longstanding pain that stand in the way of successful outcomes. In addition, MPP staff 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.[40]

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 often 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.[41] 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.[42] 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 Swanson[43] conclude that all treatments considered have possible iatrogenic complications, "perhaps with the exception of MPRPs (Multidisciplinary Pain Rehabilitation Centers)."

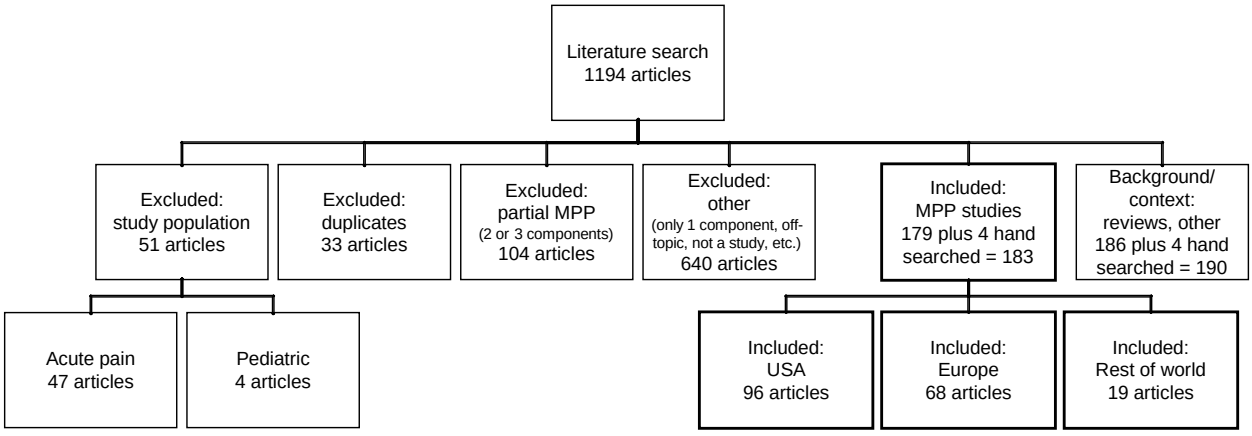
Many studies did, however, report some information about attrition (dropping out of treatment), which is generally quite high: ranging from 0 to 48 percent (comparable to the 5 to 46 percent found in one literature review.)[44] The average attrition for those studies reporting drop-out rates was 11 percent; 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. Study inclusion criteria are presented in Appendix C.

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.[ii] 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.[45]

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.[iii] 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,[11,46] 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

[ii] Unless otherwise noted, in this Brief "study" refers to an individual paper, rather than an experiment or observational trial.

[iii] 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.

treatments. Some studies specifically noted that they are treating the patients with the most intractable chronic pain, which continues to contribute to significant impairments in physical and emotional function. Some noted that they do not place many restrictions on the incoming patients based on clinical factors like litigation status or most mental health diagnoses[iv]; others require that patients explicitly accede to the treatment philosophy at the center, have no open litigation or workers compensation claims, and be treated for comorbid substance abuse before starting the program. Study exclusion criteria have been abstracted from the included studies in the Brief and are presented in Appendix D, Table D-1.

Turk and Stacey[39] 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 Crown[43] 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."[47] 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

[iv]Patients with certain mental health diagnoses are sometimes excluded from MPPs if their condition may preclude productive engagement in group therapy.

the "heterogeneous chronic pain" groups, e.g., Wang et al.,[48] 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

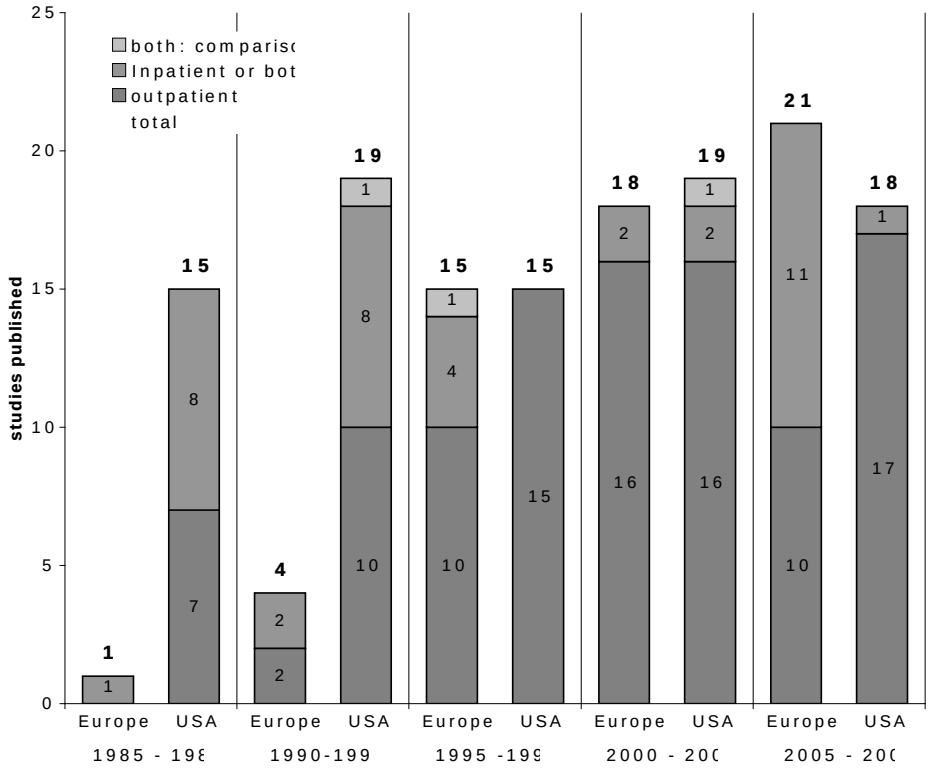
Comparison Treatment Studied	N	% Random Assignment to Treatment
No comparison treatment	116	N/A
Comparison treatment (all)	67	36%
Alternate treatment		
Alternate treatment: Non-MPP	17	65%
Alternate treatment: MPP	12	25%
No alternate treatment		
No treatment and non-completers	14	7%
Combination/multiple		
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.[49-51]

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. A consensus statement on the most important outcome domains for chronic pain clinical trials was created 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. 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.).

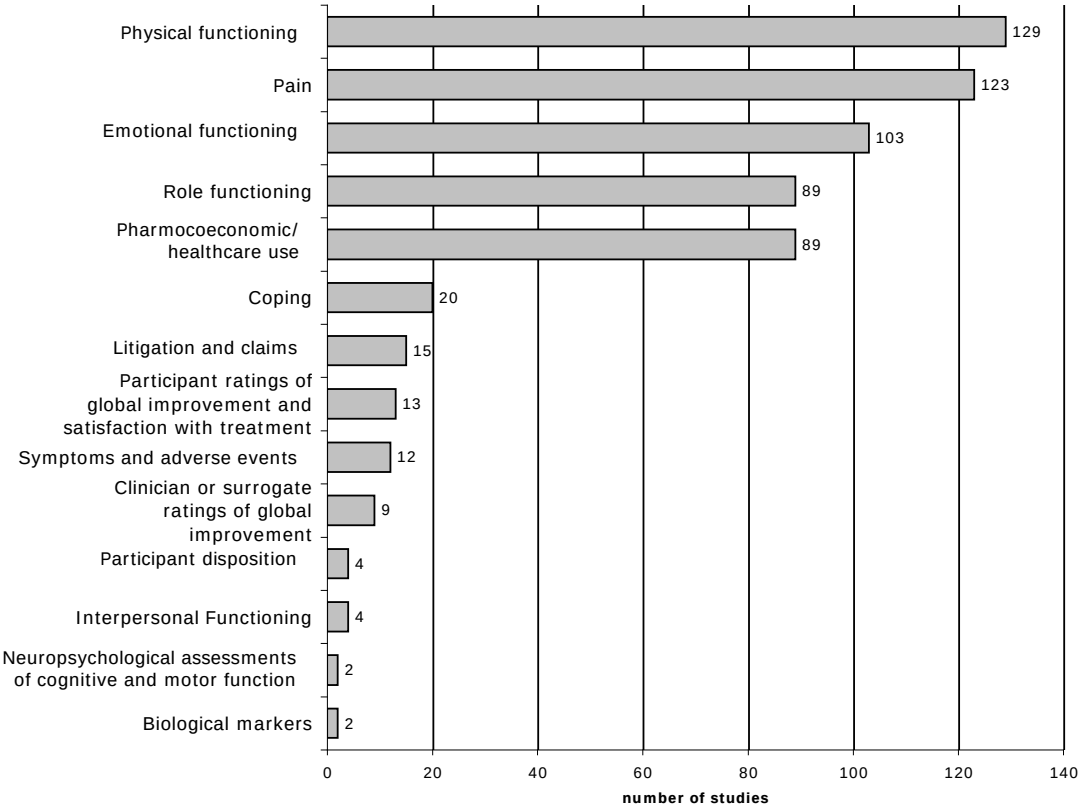
Supplemental IMMPACT recommendations include:

- 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.[52] 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.[53])

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 percent; 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 a majority of the studies had no comparison population. 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

In addition to summarizing the available research on MPPs, this Technical Brief describes some of the key trends and challenges that have implications for the future of MPPs in the treatment of chronic noncancer pain. The most pressing problem facing the MPP, as we heard from our Key Informants, is the declining access to MPPs. Some of the reasons behind this decline are highlighted below. Another challenge discussed in this section is obtaining adequate reimbursement from third-party payers to providers of MPP treatment. Some of the controversies related to the role of opioids in the treatment of chronic pain are outlined because of both the prominence of the debate and the possible role of MPPs as an alternative to widespread opioid therapy. There is a short discussion of some patient concerns, which are, unfortunately, beyond the scope of the Brief. Finally, some research design challenges are highlighted.

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 growing[32]). Meldrum[54] 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. The 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 percutaneous spinal procedures and spine surgery 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 surgical cure or a pill over the intensive cognitive and behavioral changes required by an MPP.

Gatchel and his colleagues[55] 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."[56v]

Carve-Outs and Third-Party Payment Issues

Gatchel and colleagues[55] 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.[40,57,58] 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 productive lives produce much greater long-term cost-effectiveness in terms of future health care, tax, legal, and general economic factors.

Schatman[32] challenges the efficiency of carve-outs by referring readers to Gatchel's work on the topic and 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."[55]

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 to address issues caused by the workplace incident alone, 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 of the included studies noted a policy of tapering patients off opioids when (or before) they begin treatment (see Table D-2 in Appendix D for examples under "medical component"). Other practitioners believe well-managed opioid therapy can improve quality of life for some patients with chronic pain.[59,60] An in-depth review of the benefits and costs—both economic and otherwise—of use of opioids to treat chronic, noncancer pain is beyond the scope of this work. In brief, the key issues are as follows:

- **Efficacy.** The use of opioids to manage acute pain and cancer pain is widespread and relatively straightforward, but their appropriateness for chronic pain is sometimes disputed.[61]

[v]The original used the acronym "IPRPs"—interdisciplinary pain rehabilitation programs—another name for MPPs.

- **Side effects.** Dry mouth, constipation, and nausea are among the most common adverse effects of opioid therapy; a substantial minority of participants in RCTs of opioids for chronic noncancer pain withdrew from the trials because of adverse effects (20-30 percent for opioids versus 5 to 15 percent for placebo).[61]
- **Tolerance, dose escalation, and induced hyperalgesia.** Some patients on long-term opioid therapy receive increasing doses of their medication over time. There are several potential causes: it may reflect an increase in pain due to progression of the underlying disease; development of a tolerance to opioids; or development of opioid-induced hyperalgesia (increased pain sensitivity). In some cases, dose escalation may be an indication of addiction or "diversion" of the drug (e.g., selling or giving drugs to others).[61] However, most studies suggest fewer than 1 in 5 patients taking opioids for chronic noncancer pain become addicted.[61,62]
- **Misuse and abuse potential.** National surveys suggest that more than 19 million Americans misuse opioids, with more than 2 million "new initiates" to prescription opioid misuse every year.[63] People who misuse these drugs may feel they are safer and more pure than street drugs—and more easily available.[64] However, unmonitored use of opioids can be dangerous: accidental overdose of opioids caused 11,499 deaths in the US in 2007, up from around 3000 in 1999.[65]
- **Accessibility and regulations.** Because of the potential for abuse, opioids are strictly regulated at both a federal and a state level. These regulations can make it more difficult for patients to receive appropriate opioid treatment. Passik[66] notes that "[p]hysicians who prescribe opioids must maintain extensive documentation and may be subject to investigation by the Drug Enforcement Administration."[67-69] Patients may have difficulty finding an accessible pharmacy willing to stock some types of opioids.[70]
- The FDA is currently developing risk evaluation and mitigation strategies (REMS) to reduce misuse of opioids.[71] Some believe this intervention may have the effect of reducing patient access to these drugs in the future; however, the policies are still being developed, so their impact is not yet clear.[64]

The potential harm from misuse of opioids must be weighed against a humane concern for the suffering of people with persistent pain. This has not been an easy balance to find. Solutions will likely require education of both physicians and patients on appropriate use of opioids, research to identify the patients most likely to benefit from opioid therapy, and improved access to non-drug therapies like MPPs that could reduce the need for opioids.

Patient-Related Issues

A simplistic reading of the biopsychosocial model of pain may lead to 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"[72]). 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.[73]

At least historically, some physicians have believed that pain with a psychological component is in the patient's control. As quoted in Meldrum,[74] 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.'"[75]

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."[76,77]

Study Design

The literature includes relatively few RCTs. Several authors noted ethical issues prevented them from using random assignment to treatment (see examples[78-82]). 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,[17] 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 (examples[83-86]). 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 Rudy[44] 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.

An ongoing U.S. RCT by Gatchel et al.[87] 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 patients with chronic pain 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.

Next Steps

There are several reviews of the current body of research on efficacy of MPPs as treatment for chronic, noncancer pain (examples[1,2,88-95]). These reviews include discussions of efficacy in various different pain conditions, populations, and treatment modes, as well as noted problems with study designs, outcome measurements, and the difficulty of aggregating information across studies. The most comprehensive systematic review reported qualitative evidence for MPPs effectiveness compared to standard treatment and non-MPP treatment for patients with chronic back pain, fibromyalgia and mixed chronic pain. However, the review also noted the generally low quality of the available studies for review.[1]

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 (including research into the genetics and molecular biology of pain), 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.

References

1. Scascighini L, Toma V, Dober-Spielmann S, et al. Multidisciplinary treatment for chronic pain: a systematic review of interventions and outcomes. Rheumatology 2008 May;47(5):670-8.
2. Gatchel RJ, Okifuji A. Evidence-based scientific data documenting the treatment and cost-effectiveness of comprehensive pain programs for chronic nonmalignant pain. Journal of Pain 2006 Nov;7(11):779-93.
3. American Pain Society. Remove barriers to interdisciplinary pain care approaches. Available at: http://www.ampainsoc.org/advocacy/legislative_agenda.htm. Accessed March 29, 2010.
4. International Association for the Study of Pain. Pain. IASP Pain Terminology. http://www.iasp-pain.org/AM/Template.cfm?Section=Pain_Definitions&Template=/CM/HTMLDisplay.cfm&ContentID=1728#Pain; 1994.
5. Turk DC, Okifuji A. Pain Terms and Taxonomies of Pain. In: Loeser JD, ed. Bonica's Management of Pain. 3rd ed. Philadelphia: Lippincott Williams & Wilkins; 2001; 17-25.
6. Sanders SH, Harden RN, Vicente PJ. Evidence-based clinical practice guidelines for interdisciplinary rehabilitation of chronic nonmalignant pain syndrome patients. Pain Pract 2005 Dec 1;5(4):303-15.
7. Young Casey C, Greenberg MA, Nicassio PM, et al. Transition from acute to chronic pain and disability: a model including cognitive, affective, and trauma factors. Pain 2008 Jan;134(1-2):69-79.
8. Gatchel RJ, Epker J. Psychosocial Predictors of Chronic Pain and Response to Treatment. In: Gatchel RJ, Turk DC, eds. Psychosocial Factors in Pain. New York: The Guilford Press; 1999; 412-34.
9. Von Korff M. Perspectives on management of back pain in primary care. In: Gebhart GL, Hammond DL, Jensen TS, eds. Proceedings of the Seventh World Congress on Pain: Vol. 2. Progress in pain research and management. Seattle, WA: IASP Press; 1994; 97-110.
10. Linton SJ. Prevention with Special Reference to Chronic Musculoskeletal Disorders. In: Gatchel RJ, Turk DC, eds. Psychosocial Factors in Pain: Critical Perspectives. New York: The Guilford Press; 1999; 374-89.
11. Mayer TG, Gatchel RJ. Functional restoration for spinal disorders: The sports medicine approach. Philadelphia: Lea & Febiger; 1988.
12. Garofalo JP, Polatin P. Low Back Pain: An Epidemic in Industrialized Countries. In: Gatchel RJ, Turk DC, eds. Psychosocial Factors in Pain: Critical Perspectives. New York: The Guilford Press; 1999; 164-74.
13. Mayer TG. Rationale for modern spinal care. In: Mayer TG, Mooney V, Gatchel RJ, eds. Contemporary conservative care for painful spinal disorders. Philadelphia: Lea & Febiger; 1991; 3-9.
14. Turk DC, Okifuji A, Sinclair JD, et al. Interdisciplinary treatment for fibromyalgia syndrome: clinical and statistical significance. Arthritis Care & Research 1998 Jun;11(3):186-95.
15. Gustafsson M, Ekholm J, Broman L. Effects of a multiprofessional rehabilitation programme for patients with fibromyalgia syndrome. Journal of Rehabilitation Medicine 2002 May;34(3):119-27.
16. Jensen MP, Nielson WR, Turner JA, et al. Readiness to self-manage pain is associated with coping and with psychological and physical functioning among patients with chronic pain. Pain 2003 Aug;104(3):529-37.
17. Currie SR, Hodgins DC, Crabtree A, et al. Outcome from integrated pain management treatment for recovering substance abusers. Journal of Pain 2003 Mar;4(2):91-100.

18. Cedraschi C, Desmeules J, Rapiti E, et al. Fibromyalgia: a randomised, controlled trial of a treatment programme based on self management. Annals of the Rheumatic Diseases 2004 Mar;63(3):290-6.

19. Jensen MP, Nielson WR, Turner JA, et al. Changes in readiness to self-manage pain are associated with improvement in multidisciplinary pain treatment and pain coping. Pain 2004 Sep;111(1-2):84-95.

20. Angst F, Brioschi R, Main CJ, et al. Interdisciplinary rehabilitation in fibromyalgia and chronic back pain: a prospective outcome study. Journal of Pain 2006 Nov;7(11):807-15.

21. Hooten WM, Townsend CO, Sletten CD, et al. Treatment outcomes after multidisciplinary pain rehabilitation with analgesic medication withdrawal for patients with fibromyalgia. Pain Medicine 2007 Jan-Feb;8(1):8-16.

22. Suman AL, Biagi B, Biasi G, et al. One-year efficacy of a 3-week intensive multidisciplinary non-pharmacological treatment program for fibromyalgia patients. Clinical & Experimental Rheumatology 2009 Jan-Feb;27(1):7-14.

23. Angst F, Verra ML, Lehmann S, et al. Clinical effectiveness of an interdisciplinary pain management programme compared with standard inpatient rehabilitation in chronic pain: a naturalistic, prospective controlled cohort study. Journal of Rehabilitation Medicine 2009 Jun;41(7):569-75.

24. Verra ML, Angst F, Brioschi R, et al. Does classification of persons with fibromyalgia into Multidimensional Pain Inventory subgroups detect differences in outcome after a standard chronic pain management program? Pain Research & Management 2009 Nov-Dec;14(6):445-53.

25. Burnham R, Day J, Dudley W. Multidisciplinary chronic pain management in a rural Canadian setting. Canadian Journal of Rural Medicine 2010; 15(1):7-13.

26. Moore JE, Armentrout DP, Parker JC, et al. Empirically derived pain-patient MMPI subgroups: prediction of treatment outcome. Journal of Behavioral Medicine 1986 Feb;9(1):51-63.

27. Scharff L, Marcus DA. Interdisciplinary outpatient group treatment of intractable headache. Headache 1994 Feb;34(2):73-8.

28. Sanders SH, Brena SF. Empirically derived chronic pain patient subgroups: the utility of multidimensional clustering to identify differential treatment effects. Pain 1993 Jul;54(1):51-6.

29. Magnusson JE, Riess CM, Becker WJ. Effectiveness of a multidisciplinary treatment program for chronic daily headache. Canadian Journal of Neurological Sciences 2004 Feb;31(1):72-9.

30. Gunreben-Stempfle B, Griessinger N, Lang E, et al. Effectiveness of an intensive multidisciplinary headache treatment program. Headache 2009 Jul;49(7):990-1000.

31. Skouen JS, Grasdal A, Haldorsen EMH. Return to work after comparing outpatient multidisciplinary treatment programs versus treatment in general practice for patients with chronic widespread pain. European Journal of Pain: Ejp 2006 Feb;10(2):145-52.

32. Schatman ME. Interdisciplinary chronic pain management: perspectives on history, current status, and future viability. In: Fishman SM, Ballantyne J, Rathmell J, eds. Bonica's Management of Pain. 4 ed. Baltimore, MD: Lippincott Williams & Wilkins; 2010; 1523-32.

33. Juni P, Holenstein F, Sterne J, et al. Direction and impact of language bias in meta-analyses of controlled trials: empirical study. Int J Epidemiol 2002;31(1):115-23.

34. American Academy of Pain Management. AAPM - Pain Program Accreditation. Available at: http://www.aapainmanage.org/programs/PPAMain.php. Accessed August 26, 2010.

35. CARF. Find an Accredited Provider. Available at: http://www.carf.org/providerSearch.aspx. Accessed August 26, 2010.

36. Turk DC, Okifuji A. Treatment of Chronic Pain Patients: Clinical Outcomes, Cost-Effectiveness, and Cost-Benefits of Multidisciplinary Pain Centers. Critical Reviews in Physical and Rehabilitation Medicine 1998;10(2):181-208.

37. Gatchel RJ, Turk DC. Interdisciplinary Treatment of Chronic Pain Patients. In: Gatchel RJ, Turk DC, eds. Psychosocial Factors in Pain. New York: The Guilford Press; 1999; 435-44.

38. Loeser JD, Egan KJ. Inpatient Pain Treatment Program. In: Loeser JD, Egan KJ, eds. Managing the chronic pain patient: theory and practice at the University of Washington Multidisciplinary Pain Center. New York: Raven Press; 1989; 37-49.

39. Turk DC, Stacey BR. Multidisciplinary Pain Centers Treatment of Chronic Back Pain. In: Frymoyer JW, ed. The Adult Spine: Principles and Practice Vol 1. 2d ed. Philadelphia: Lippincott-Raven Publishers; 1997; 253-74.

40. Robbins H, Gatchel RJ, Noe C, et al. A prospective one-year outcome study of interdisciplinary chronic pain management: compromising its efficacy by managed care policies. Anesthesia & Analgesia 2003 Jul;97(1):156-62.

41. Stanos S, Houle TT. Multidisciplinary and interdisciplinary management of chronic pain. Physical Medicine & Rehabilitation Clinics of North America 2006 May;17(2):435-50.

42. Masuda A, Koga Y, Hattanmaru M, et al. The effects of repeated thermal therapy for patients with chronic pain. Psychotherapy & Psychosomatics 2005;74(5):288-94.

43. Turk DC, Swanson K. Efficacy and Cost-Effectiveness Treatment for Chronic Pain: An Analysis and Evidence-Based Synthesis. In: Schatman ME, Campbell A, eds. Chronic pain management: guidelines for multidisciplinary program development. New York: Informa Healthcare USA; 2007; 15-38.

44. Turk DC, Rudy TE. Neglected factors in chronic pain treatment outcome studies--referral patterns, failure to enter treatment, and attrition. Pain 1990 Oct;43(1):7-25.

45. Bendix AF, Bendix T, Vaegter K, et al. Multidisciplinary intensive treatment for chronic low back pain: a randomized, prospective study. Cleveland Clinic Journal of Medicine 1996 Jan-Feb;63(1):62-9.

46. Mayer TG, Gatchel RJ, Kishino N, et al. Objective assessment of spine function following industrial injury. A prospective study with comparison group and one-year follow-up. Spine 1985 Jan 1;10(6):482-93.

47. Crown S. Psychological aspects of low back pain. Rheumatol Rehabil 1978 May 1;17(2):114-24.

48. Wang H, Schiltenwolf M, Buchner M. The role of TNF-alpha in patients with chronic low back pain-a prospective comparative longitudinal study. Clinical Journal of Pain 2008 Mar-Apr;24(3):273-8.

49. Lipchik GL, Milles K, Covington EC. The effects of multidisciplinary pain management treatment on locus of control and pain beliefs in chronic non-terminal pain. Clinical Journal of Pain 1993 Mar;9(1):49-57.

50. Williams ACdC, Nicholas MK, Richardson PH, et al. Generalizing from a controlled trial: the effects of patient preference versus randomization on the outcome of inpatient versus outpatient chronic pain management. Pain 1999 Oct;83(1):57-65.

51. Chapman SL, Jamison RN, Sanders SH, et al. Perceived treatment helpfulness and cost in chronic pain rehabilitation. Clinical Journal of Pain 2000 Jun;16(2):169-77.

52. Boothby JL, Thorn BE, Stroud MW, et al. Coping with Pain. In: Gatchel RJ, Turk DC, eds. Psychosocial Factors in Pain. New York: The Guilford Press; 1999; 343-59.

53. Turk DC, Dworkin RH, Allen RR, et al. Core outcome domains for chronic pain clinical trials: IMMPACT recommendations. Pain 2003 Dec 1;106(3):337-45.

54. Meldrum ML. Brief History of Multidisciplinary Management of Chronic Pain, 1900-2000. In: Schatman ME, Campbell A, eds. Chronic pain management: guidelines for multidisciplinary program development. New York: Informa Healthcare USA; 2007; 1-13.

55. Gatchel RJ, Kishino ND, Noe C. "Carving-Out" Services from Multidisciplinary Chronic Pain Management Programs: Negative Impact on Therapeutic Efficacy. In: Schatman ME, Campbell A, eds. Chronic pain management: guidelines for multidisciplinary program development. New York: Informa Healthcare USA; 2007; 39-48.

56. Martinsons J. Financial Rehab for Interdisciplinary Programs. APS Bulletin 2007; 17(3):np.

57. Gatchel RJ, Noe C, Gajraj N, et al. The negative impact on an interdisciplinary pain management program of insurance "treatment carve out" practices. J Work Compens 2001;10:50-63.

58. Keel P, Wittig R, Deutschman R, et al. Effectiveness of in-patient rehabilitation for sub-chronic and chronic low back pain by an integrative group treatment program. Scand J Rehabil Med 1998;30:211-9.

59. Portenoy RK. Opioid therapy for chronic nonmalignant pain: a review of the critical issues. J Pain Symptom Manage 1996;11(4):203-17.

60. Ballantyne J. Problems with Chronic Opioid Therapy and Need for a Multidisciplinary Approach. In: Schatman ME, Campbell A, eds. Chronic pain management: guidelines for multidisciplinary program development. New York: Informa Healthcare USA; 2007; 49-61.

61. Goucke CR, Visser EJ. Opioids and chronic noncancer pain. In: Wilson PR, Watson PJ, Haythornthwaite JA, et al., eds. Clinical Pain Management: Chronic Pain. 2d ed. London: Hodder and Stoughton Limited; 2008; 207-29.

62. Fishbain DA, Rosomoff HL, Rosomoff RS. Drug abuse, dependence, and addiction in chronic pain patients. Clinical Journal of Pain 1992 Jun;8(2):77-85.

63. Denisco R. Prescription Opioid Abuse: Public Health Perspective. Paper presented at: IMMPACT-X, 2009; Arlington, VA. Available at: http://www.immpact.org/meetings/Immpact10/background/Denisco.pdf.

64. Ballantyne J. U.S. Opioid Risk Mangement Initiatives. Pain Clinical Updates 2009 Nov;17(6):1-5.

65. Okie S. A flood of opioids, a rising tide of deaths. N Engl J Med 2010 Nov 18;363(21):1981-5.

66. Passik SD. Issues in long-term opioid therapy: unmet needs, risks, and solutions. Mayo Clinic Proceedings 2009 Jul;84(7):593-601.

67. Gourlay DL, Heit HA, Almahrezi A. Universal precautions in pain medicine: a rational approach to the treatment of chronic pain. Pain Med 2005 Jan 1;6(2):107-12.

68. Katz NP, Adams EH, Benneyan JC, et al. Foundations of opioid risk management. Clin J Pain 2007 Feb 1;23(2):103-18.

69. Trescot AM, Boswell MV, Atluri SL, et al. Opioid guidelines in the management of chronic non-cancer pain. Pain Physician 2006 Jan 1;9(1):1-39.

70. Morrison RS, Wallenstein S, Natale DK, et al. "We don't carry that"—failure of pharmacies in predominantly nonwhite neighborhoods to stock opioid analgesics. N Engl J Med 2000 Apr 6;342(14):1023-6.

71. U.S. Food and Drug Administration. Opioid Drugs and Risk Evaluation and Mitigation Strategies (REMS). Available at: http://www.fda.gov/Drugs/DrugSafety/InformationbyDrugClass/ucm163647.htm. Accessed January 4, 2011.

72. Benner DE. Who Can Help Me? A Chronic Pain Patient's View of Multidisciplinary Treatment. In: Schatman ME, Campbell A, eds. Chronic pain management: guidelines for multidisciplinary program development. New York: Informa Healthcare USA; 2007; 117-27.

73. Lebovits A. Ethics and pain: why and for whom? Pain Med 2001 Jun 1; 2(2):92-6.

74. Meldrum ML. A capsule history of pain management. JAMA 2003 Nov 12;290(18):2470-5.

75. Livingston WK. Pain and Suffering. Seattle, WA: International Association for the Study of Pain Press; 1998.

76. Dworkin SF, Von Korff M, LeResch L. Epidemiologic studies of chronic pain: A dynamic-ecologic perspective. Annals of Behavioral Medicine 1992;14:3-11.

77. Turk DC, Flor H. Chronic Pain: A Biobehavioral Perspective. In: Gatchel RJ, Turk DC, eds. Psychosocial Factors in Pain. New York: The Guilford Press; 1999; 18-34.

78. Deardorff WW, Rubin HS, Scott DW. Comprehensive multidisciplinary treatment of chronic pain: a follow-up study of treated and non-treated groups. Pain 1991 Apr;45(1):35-43.

79. Pfingsten M, Hildebrandt J, Leibing E, et al. Effectiveness of a multimodal treatment program for chronic low-back pain. Pain 1997 Oct;73(1):77-85.

80. Mayer T, McMahon MJ, Gatchel RJ, et al. Socioeconomic outcomes of combined spine surgery and functional restoration in workers' compensation spinal disorders with matched controls. Spine 1998 Mar 1;23(5):598-605; discussion 6.

81. Turner-Stokes L, Erkeller-Yuksel F, Miles A, et al. Outpatient cognitive behavioral pain management programs: a randomized comparison of a group-based multidisciplinary versus an individual therapy model. Archives of Physical Medicine & Rehabilitation 2003 Jun;84(6):781-8.

82. Perry KN, Nicholas MK, Middleton JW. Comparison of a pain management program with usual care in a pain management center for people with spinal cord injury-related chronic pain. Clinical Journal of Pain 2010 Mar-Apr;26(3):206-16.

83. Bendix T, Bendix A, Labriola M, et al. Functional restoration versus outpatient physical training in chronic low back pain: a randomized comparative study. Spine 2000 Oct 1;25(19):2494-500.

84. Bendix AF, Bendix T, Lund C, et al. Comparison of three intensive programs for chronic low back pain patients: a prospective, randomized, observer-blinded study with one-year follow-up. Scandinavian Journal of Rehabilitation Medicine 1997 Jun;29(2):81-9.

85. Guck TP, Fleischer TD, Willcockson JC, et al. Predictive validity of the pain and impairment relationship scale in a chronic nonmalignant pain population. Archives of Physical Medicine & Rehabilitation 1999 Jan;80(1):91-5.

86. Bendix AF, Bendix T, Ostenfeld S, et al. Active treatment programs for patients with chronic low back pain: a prospective, randomized, observer-blinded study. European Spine Journal 1995 4(3):148-52.

87. Gatchel RJ, McGeary DD, Peterson A, et al. Preliminary findings of a randomized controlled trial of an interdisciplinary military pain program. Military Medicine 2009 Mar;174(3):270-7.

88. Ravenek MJ, Hughes ID, Ivanovich N, et al. A systematic review of multidisciplinary outcomes in the management of chronic low back pain. Work 2010;35(3):349-67.

89. van Geen J-W, Edelaar MJA, Janssen M, et al. The long-term effect of multidisciplinary back training: a systematic review. Spine 2007 Jan 15;32(2):249-55.

90. Poiraudeau S, Rannou F, Revel M. Functional restoration programs for low back pain: a systematic review. Annales de Readaptation et de Medecine Physique 2007 2007 Jul;50(6):425-9.

91. Chou R, Huffman LH, American Pain S, et al. Nonpharmacologic therapies for acute and chronic low back pain: a review of the evidence for an American Pain Society/American College of Physicians clinical practice guideline. Annals of Internal Medicine 2007 Oct 2;147(7):492-504.

92. van der Hulst M, Vollenbroek-Hutten MMR, Ijzerman MJ. A systematic review of sociodemographic, physical, and psychological predictors of multidisciplinary rehabilitation-or, back school treatment outcome in patients with chronic low back pain. Spine 2005 Apr 1;30(7):813-25.

93. Uhlig T, Finset A, Kvien TK. Effectiveness and cost-effectiveness of comprehensive rehabilitation programs. Current Opinion in Rheumatology 2003 Mar;15(2):134-40.

94. Thomsen AB, Sorensen J, Sjogren P, et al. Economic evaluation of multidisciplinary pain management in chronic pain patients: a qualitative systematic review. Journal of Pain & Symptom Management 2001 Aug;22(2):688-98.

95. Nielson WR, Weir R. Biopsychosocial approaches to the treatment of chronic pain. Clinical Journal of Pain 2001 Dec;17(4 Suppl):S114-27.

96. Alaranta H, Rytokoski U, Rissanen A, et al. Intensive physical and psychosocial training program for patients with chronic low back pain. A controlled clinical trial. Spine 1994 Jun 15;19(12):1339-49.

97. Altmaier EM, Lehmann TR, Russell DW, et al. The effectiveness of psychological interventions for the rehabilitation of low back pain: a randomized controlled trial evaluation. Pain 1992 Jun;49(3):329-35.

98. Andary MT, Crewe N, Ganzel SK, et al. Traumatic brain injury/chronic pain syndrome: a case comparison study. Clinical Journal of Pain 1997 Sep;13(3):244-50.

99. Bailey BE, Freedenfeld RN, Kiser RS, et al. Lifetime physical and sexual abuse in chronic pain patients: psychosocial correlates and treatment outcomes. Disability & Rehabilitation 2003 Apr 8;25(7):331-42.

100. Bendix AE, Bendix T, Haestrup C, et al. A prospective, randomized 5-year follow-up study of functional restoration in chronic low back pain patients. European Spine Journal 1998;7(2):111-9.

101. Bendix AF, Bendix T, Haestrup C. Can it be predicted which patients with chronic low back pain should be offered tertiary rehabilitation in a functional restoration program? A search for demographic, socioeconomic, and physical predictors. Spine 1998 Aug 15;23(16):1775-83; discussion 83-4.

102. Bendix AF, Bendix T, Labriola M, et al. Functional restoration for chronic low back pain. Two-year follow-up of two randomized clinical trials. Spine 1998 Mar 15;23(6):717-25.

103. Bliokas VV, Cartmill TK, Nagy BJ. Does systematic graded exposure in vivo enhance outcomes in multidisciplinary chronic pain management groups? Clinical Journal of Pain 2007 May;23(4):361-74.

104. Buchner M, Zahlten-Hinguranage A, Schiltenwolf M, et al. Therapy outcome after multidisciplinary treatment for chronic neck and chronic low back pain: a prospective clinical study in 365 patients. Scandinavian Journal of Rheumatology 2006 Sep-Oct;35(5):363-7.

105. Buchner M, Neubauer E, Zahlten-Hinguranage A, et al. Age as a predicting factor in the therapy outcome of multidisciplinary treatment of patients with chronic low back pain—a prospective longitudinal clinical study in 405 patients. Clinical Rheumatology 2007 Mar;26(3):385-92.

106. Buchner M, Neubauer E, Zahlten-Hinguranage A, et al. The influence of the grade of chronicity on the outcome of multidisciplinary therapy for chronic low back pain. Spine 2007 Dec 15;32(26):3060-6.

107. Burns JW. Repression predicts outcome following multidisciplinary treatment of chronic pain. Health Psychology 2000 Jan;19(1):75-84.

108. Burns JW, Johnson BJ, Devine J, et al. Anger management style and the prediction of treatment outcome among male and female chronic pain patients. Behaviour Research & Therapy 1998 Nov;36(11):1051-62.

109. Burns JW, Johnson BJ, Mahoney N, et al. Cognitive and physical capacity process variables predict long-term outcome after treatment of chronic pain. Journal of Consulting & Clinical Psychology 1998 Apr;66(2):434-9.

110. Burns JW, Glenn B, Bruehl S, et al. Cognitive factors influence outcome following multidisciplinary chronic pain treatment: a replication and extension of a cross-lagged panel analysis. Behaviour Research & Therapy 2003 Oct;41(10):1163-82.

111. Burns JW, Kubilus A, Bruehl S, et al. Do changes in cognitive factors influence outcome following multidisciplinary treatment for chronic pain? A cross-lagged panel analysis. Journal of Consulting & Clinical Psychology 2003 Feb;71(1):81-91.

112. Burns JW, Glenn B, Lofland K, et al. Stages of change in readiness to adopt a self-management approach to chronic pain: the moderating role of early-treatment stage progression in predicting outcome. Pain 2005 Jun;115(3):322-31.

113. Carleton RN, Abrams MP, Kachur SS, et al. A comparison of anatomical pain sites from a tertiary care sample: evidence of disconnect between functional and perceived disability specific to lower back pain. European Journal of Pain: Ejp 2010 Apr;14(4):410-7.

114. Cassisi JE, Sypert GW, Salamon A, et al. Independent evaluation of a multidisciplinary rehabilitation program for chronic low back pain. Neurosurgery 1989 Dec;25(6):877-83.

115. Chapman SL, Brena SF. Patterns of conscious failure to provide accurate self-report data in patients with low back pain. Clinical Journal of Pain 1990 Sep;6(3):178-90.

116. Chapman SL, Pemberton JS. Prediction of treatment outcome from clinically derived MMPI clusters in rehabilitation for chronic low back pain. Clinical Journal of Pain 1994 Dec;10(4):267-76.

117. Chapman SL, Jamison RN, Sanders SH. Treatment Helpfulness Questionnaire: a measure of patient satisfaction with treatment modalities provided in chronic pain management programs. Pain 1996 Dec;68(2-3):349-61.

118. Ciechanowski P, Sullivan M, Jensen M, et al. The relationship of attachment style to depression, catastrophizing and health care utilization in patients with chronic pain. Pain 2003 Aug;104(3):627-37.

119. Connally GH, Sanders SH. Predicting low back pain patients' response to lumbar sympathetic nerve blocks and interdisciplinary rehabilitation: the role of pretreatment overt pain behavior and cognitive coping strategies. Pain 1991 Feb;44(2):139-46.

120. Cott A, Anchel H, Goldberg WM, et al. Non-institutional treatment of chronic pain by field management: an outcome study with comparison group. Pain 1990 Feb;40(2):183-94.

121. Crisostomo RA, Schmidt JE, Hooten WM, et al. Withdrawal of analgesic medication for chronic low-back pain patients: improvement in outcomes of multidisciplinary rehabilitation regardless of surgical history. American Journal of Physical Medicine & Rehabilitation 2008 Jul;87(7):527-36.

122. Davis VP, Fillingim RB, Doleys DM, et al. Assessment of aerobic power in chronic pain patients before and after a multi-disciplinary treatment program. Archives of Physical Medicine & Rehabilitation 1992 Aug;73(8):726-9.

123. Demoulin C, Grosdent S, Capron L, et al. Effectiveness of a semi-intensive multidisciplinary outpatient rehabilitation program in chronic low back pain. Joint, Bone, Spine: Revue du Rhumatisme 2010 Jan;77(1):58-63.

124. Dersh J, Mayer TG, Gatchel RJ, et al. Prescription opioid dependence is associated with poorer outcomes in disabling spinal disorders. Spine 2008 Sep 15;33(20):2219-27.

125. Doleys DM, Dolce JJ, Doleys AL, et al. Evaluation, narcotics and behavioral treatment influences on pain ratings in chronic pain patients. Archives of Physical Medicine & Rehabilitation 1986 Jul;67(7):456-8.

126. Dunstan DA, Covic T. Can a rural community-based work-related activity program make a difference for chronic pain-disabled injured workers? Australian Journal of Rural Health 2007 Jun;15(3):166-71.

127. Dysvik E, Vinsnes AG, Eikeland O-J. The effectiveness of a multidisciplinary pain management programme managing chronic pain. International Journal of Nursing Practice 2004 Oct;10(5):224-34.

128. Dysvik E, Natvig GK, Eikeland O-J, et al. Results of a multidisciplinary pain management program: a 6- and 12-month follow-up study. Rehabilitation Nursing 2005 Sep-Oct;30(5):198-206.

129. Edwards RR, Doleys DM, Lowery D, et al. Pain tolerance as a predictor of outcome following multidisciplinary treatment for chronic pain: differential effects as a function of sex. Pain 2003 Dec;106(3):419-26.

130. Elkayam O, Ben Itzhak S, Avrahami E, et al. Multidisciplinary approach to chronic back pain: prognostic elements of the outcome. Clinical & Experimental Rheumatology 1996 May-Jun;14(3):281-8.

131. Elkayam O, Avrahami E, Yaron M. The lack of prognostic value of computerized tomography imaging examinations in patients with chronic non-progressive back pain. Rheumatology International 1996;16(1):19-21.

132. Ersek M, Turner JA, Cain KC, et al. Results of a randomized controlled trial to examine the efficacy of a chronic pain self-management group for older adults [ISRCTN11899548]. Pain 2008 Aug 15;138(1):29-40.

133. Evans TH, Mayer TG, Gatchel RJ. Recurrent disabling work-related spinal disorders after prior injury claims in a chronic low back pain population. Spine Journal: Official Journal of the North American Spine Society 2001 May-Jun;1(3):183-9.

134. Feuerstein M, Callan-Harris S, Hickey P, et al. Multidisciplinary rehabilitation of chronic work-related upper extremity disorders. Long-term effects. Journal of Occupational Medicine 1993 Apr;35(4):396-403.

135. Fishbain DA, Lewis J, Cole B, et al. Multidisciplinary pain facility treatment outcome for pain-associated fatigue. Pain Medicine 2005 Jul-Aug;6(4):299-304.

136. Flavell HA, Carrafa GP, Thomas CH, et al. Managing chronic back pain: impact of an interdisciplinary team approach. Medical Journal of Australia 1996 Sep 2;165(5):253-5.

137. France RD, Urban BJ. Cerebrospinal fluid concentrations of beta-endorphin in chronic low back pain patients. Influence of depression and treatment. Psychosomatics 1991;32(1):72-7.

138. Fricton JR, Olsen T. Predictors of outcome for treatment of temporomandibular disorders. Journal of Orofacial Pain 1996;10(1):54-65.

139. Gagnon S, Lensel-Corbeil G, Duquesnoy B, et al. [Multicenter multidisciplinary training program for chronic low back pain: French experience of the Renodos back pain network (Reseau Nord-Pas-de-Calais du DOS)]. Annals of Physical & Rehabilitation Medicine 2009 Feb;52(1):3-16.

140. Garcy P, Mayer T, Gatchel RJ. Recurrent or new injury outcomes after return to work in chronic disabling spinal disorders. Tertiary prevention efficacy of functional restoration treatment. Spine 1996 Apr 15;21(8):952-9.

141. Gatchel RJ, Mayer TG, Capra P, et al. Million Behavioral Health Inventory: its utility in predicting physical function in patients with low back pain. Archives of Physical Medicine & Rehabilitation 1986 Dec;67(12):878-82.

142. Gatchel RJ, Mayer TG, Capra P, et al. Quantification of lumbar function. Part 6: The use of psychological measures in guiding physical functional restoration. Spine 1986 Jan-Feb;11(1):36-42.

143. Gatchel RJ, Polatin PB, Mayer TG, et al. Psychopathology and the rehabilitation of patients with chronic low back pain disability. Archives of Physical Medicine & Rehabilitation 1994 Jun;75(6):666-70.

144. Gatchel RJ, Mayer T, Dersh J, et al. The association of the SF-36 health status survey with 1-year socioeconomic outcomes in a chronically disabled spinal disorder population. Spine 1999 Oct 15;24(20):2162-70.

145. Gatchel RJ, Noe CE, Pulliam C, et al. A preliminary study of multidimensional pain inventory profile differences in predicting treatment outcome in a heterogeneous cohort of patients with chronic pain. Clinical Journal of Pain 2002 May-Jun;18(3):139-43.

146. Gatchel RJ, Mayer TG, Kidner CL, et al. Are gender, marital status or parenthood risk factors for outcome of treatment for chronic disabling spinal disorders? Journal of Occupational Rehabilitation 2005 Jun;15(2):191-201.

147. Gatchel RJ, Mayer TG. Testing minimal clinically important difference: consensus or conundrum? Spine Journal: Official Journal of the North American Spine Society 2010 Apr;10(4):321-7.

148. Glenn B, Burns JW. Pain self-management in the process and outcome of multidisciplinary treatment of chronic pain: evaluation of a stage of change model. Journal of Behavioral Medicine 2003 Oct;26(5):417-33.

149. Gross DP, Battie MC. Predicting timely recovery and recurrence following multidisciplinary rehabilitation in patients with compensated low back pain. Spine 2005 Jan 15;30(2):235-40.

150. Guck TP, Meilman PW, Skultety FM, et al. Pain-patient Minnesota Multiphasic Personality Inventory (MMPI) subgroups: evaluation of long-term treatment outcome. Journal of Behavioral Medicine 1988 Apr;11(2):159-69.

151. Hatten AL, Gatchel RJ, Polatin PB, et al. A cost-utility analysis of chronic spinal pain treatment outcomes: converting SF-36 data into quality-adjusted life years. Clinical Journal of Pain 2006 Oct;22(8):700-11.

152. Hazard RG, Fenwick JW, Kalisch SM, et al. Functional restoration with behavioral support. A one-year prospective study of patients with chronic low-back pain. Spine 1989 Feb;14(2):157-61.

153. Hazard RG, Bendix A, Fenwick JW. Disability exaggeration as a predictor of functional restoration outcomes for patients with chronic low-back pain. Spine 1991 Sep;16(9):1062-7.

154. Hazard RG, Spratt KF, McDonough CM, et al. The impact of personal functional goal achievement on patient satisfaction with progress one year following completion of a functional restoration program for chronic disabling spinal disorders. Spine 2009 Dec 1;34(25):2797-802.

155. Hildebrandt J, Pfingsten M, Saur P, et al. Prediction of success from a multidisciplinary treatment program for chronic low back pain. Spine 1997 May 1;22(9):990-1001.

156. Hooten WM, Townsend CO, Bruce BK, et al. Sex differences in characteristics of smokers with chronic pain undergoing multidisciplinary pain rehabilitation. Pain Medicine 2009 Nov;10(8):1416-25.

157. Hooten WM, Townsend CO, Bruce BK, et al. The effects of smoking status on opioid tapering among patients with chronic pain. Anesthesia & Analgesia 2009 Jan;108(1):308-15.

158. Howard KJ, Mayer TG, Gatchel RJ. Effects of presenteeism in chronic occupational musculoskeletal disorders: stay at work is validated. Journal of Occupational & Environmental Medicine 2009 Jun;51(6):724-31.

159. Huge V, Schloderer U, Steinberger M, et al. Impact of a functional restoration program on pain and health-related quality of life in patients with chronic low back pain. Pain Medicine 2006 Nov-Dec;7(6):501-8.

160. Jensen I, Nygren A, Gamberale F, et al. The role of the psychologist in multidisciplinary treatments for chronic neck and shoulder pain: a controlled cost-effectiveness study. Scandinavian Journal of Rehabilitation Medicine 1995 Mar;27(1):19-26.

161. Jensen IB, Nygren A, Lundin A. Cognitive-behavioural treatment for workers with chronic spinal pain: a matched and controlled cohort study in Sweden. Occupational & Environmental Medicine 1994 Mar;51(3):145-51.

162. Jensen IB, Bodin L. Multimodal cognitive-behavioural treatment for workers with chronic spinal pain: a matched cohort study with an 18-month follow-up. Pain 1998 May;76(1-2):35-44.

163. Jensen MP, Strom SE, Turner JA, et al. Validity of the Sickness Impact Profile Roland scale as a measure of dysfunction in chronic pain patients. Pain 1992 Aug;50(2):157-62.

164. Jensen MP, Turner JA, Romano JM. Correlates of improvement in multidisciplinary treatment of chronic pain. Journal of Consulting & Clinical Psychology 1994 Feb;62(1):172-9.

165. Jensen MP, Turner JA, Romano JM. Changes in beliefs, catastrophizing, and coping are associated with improvement in multidisciplinary pain treatment. Journal of Consulting & Clinical Psychology 2001 Aug;69(4):655-62.

166. Jensen MP, Turner JA, Romano JM. Changes after multidisciplinary pain treatment in patient pain beliefs and coping are associated with concurrent changes in patient functioning. Pain 2007 Sep;131(1-2):38-47.

167. Jousset N, Fanello S, Bontoux L, et al. Effects of functional restoration versus 3 hours per week physical therapy: a randomized controlled study. Spine 2004 Mar 1;29(5):487-93; discussion 94.

168. Kaapa EH, Frantsi K, Sarna S, et al. Multidisciplinary group rehabilitation versus individual physiotherapy for chronic nonspecific low back pain: a randomized trial. Spine 2006 Feb 15;31(4):371-6.

169. Kenny DT, Faunce G. The impact of group singing on mood, coping, and perceived pain in chronic pain patients attending a multidisciplinary pain clinic. Journal of Music Therapy 2004;41(3):241-58.

170. Keogh E, McCracken LM, Eccleston C. Do men and women differ in their response to interdisciplinary chronic pain management? Pain 2005 Mar;114(1-2):37-46.

171. Kidner CL, Mayer TG, Gatchel RJ. Higher opioid doses predict poorer functional outcome in patients with chronic disabling occupational musculoskeletal disorders. Journal of Bone & Joint Surgery—American Volume 2009 Apr;91(4):919-27.

172. Kleinke CL, Spangler AS, Jr. Psychometric analysis of the audiovisual taxonomy for assessing pain behavior in chronic back-pain patients. Journal of Behavioral Medicine 1988 Feb;11(1):83-94.

173. Kohles S, Barnes D, Gatchel RJ, et al. Improved physical performance outcomes after functional restoration treatment in patients with chronic low-back pain. Early versus recent training results. Spine 1990 Dec;15(12):1321-4.

174. Kole-Snijders AM, Vlaeyen JW, Goossens ME, et al. Chronic low-back pain: what does cognitive coping skills training add to operant behavioral treatment? Results of a randomized clinical trial. Journal of Consulting & Clinical Psychology 1999 Dec;67(6):931-44.

175. Koopman FS, Edelaar M, Slikker R, et al. Effectiveness of a multidisciplinary occupational training program for chronic low back pain: a prospective cohort study. American Journal of Physical Medicine & Rehabilitation 2004 Feb;83(2):94-103.

176. Lang E, Liebig K, Kastner S, et al. Multidisciplinary rehabilitation versus usual care for chronic low back pain in the community: effects on quality of life. Spine Journal: Official Journal of the North American Spine Society 2003 Jul-Aug;3(4):270-6.

177. Law RYW, Harvey LA, Nicholas MK, et al. Stretch exercises increase tolerance to stretch in patients with chronic musculoskeletal pain: a randomized controlled trial. Physical Therapy 2009 Oct;89(10):1016-26.

178. Luoto S, Taimela S, Hurri H, et al. Psychomotor speed and postural control in chronic low back pain patients A controlled follow-up study. Spine 1996 Nov 15;21(22):2621-7.

179. Luoto S, Aalto H, Taimela S, et al. One-footed and externally disturbed two-footed postural control in patients with chronic low back pain and healthy control subjects. A controlled study with follow-up. Spine 1998 Oct 1;23(19):2081-9; discussion 9-90.

180. Lynch RT, Agre J, Powers JM, et al. Long-term follow-up of outpatient interdisciplinary pain management with a no-treatment comparison group. American Journal of Physical Medicine & Rehabilitation 1996 May-Jun;75(3):213-22.

181. Maclaren JE, Gross RT, Sperry JA, et al. Impact of opioid use on outcomes of functional restoration. Clinical Journal of Pain 2006 May;22(4):392-8.

182. Man AKY, Chu MC, Chen PP, et al. Clinical experience with a chronic pain management programme in Hong Kong Chinese patients. Hong Kong Medical Journal 2007 Oct;13(5):372-8.

183. Mangels M, Schwarz S, Worringen U, et al. Evaluation of a behavioral-medical inpatient rehabilitation treatment including booster sessions: a randomized controlled study. Clinical Journal of Pain 2009 Jun;25(5):356-64.

184. Maruta T, Swanson DW, McHardy MJ. Three year follow-up of patients with chronic pain who were treated in a multidisciplinary pain management center. Pain 1990 Apr;41(1):47-53.

185. Mayer T, Tabor J, Bovasso E, et al. Physical progress and residual impairment quantification after functional restoration. Part I: Lumbar mobility. Spine 1994 Feb 15;19(4):389-94.

186. Mayer T, Gatchel RJ, Evans T. Effect of age on outcomes of tertiary rehabilitation for chronic disabling spinal disorders. Spine 2001 Jun 15;26(12):1378-84.

187. Mayer T, Aceska A, Gatchel RJ. Is obesity overrated as a "risk factor" for poor outcomes in chronic occupational spinal disorders? Spine 2006 Dec 1;31(25):2967-72.

188. Mayer TG, Gatchel RJ, Kishino N, et al. A prospective short-term study of chronic low back pain patients utilizing novel objective functional measurement. Pain 1986 Apr;25(1):53-68.

189. Mayer TG, Gatchel RJ, Mayer H, et al. A prospective two-year study of functional restoration in industrial low back injury. An objective assessment procedure. [Erratum appears in JAMA 1988 Jan 8;259(2):220]. JAMA 1987 Oct 2;258(13):1763-7.

190. Mayer TG, Barnes D, Nichols G, et al. Progressive isoinertial lifting evaluation. II. A comparison with isokinetic lifting in a disabled chronic low-back pain industrial population. [Erratum appears in Spine 1990 Jan;15(1):5]. Spine 1988 Sep;13(9):998-1002.

191. Mayer TG, Anagnostis C, Gatchel RJ, et al. Impact of functional restoration after anterior cervical fusion on chronic disability in work-related neck pain. Spine Journal: Official Journal of the North American Spine Society 2002 Jul-Aug;2(4):267-73.

192. Mayer TG, Towns BL, Neblett R, et al. Chronic widespread pain in patients with occupational spinal disorders: prevalence, psychiatric comorbidity, and association with outcomes. Spine 2008 Aug 1;33(17):1889-97.

193. McCracken LM, Vowles KE, Eccleston C. Acceptance-based treatment for persons with complex, long standing chronic pain: a preliminary analysis of treatment outcome in comparison to a waiting phase. Behaviour Research & Therapy 2005 Oct;43(10):1335-46.

194. Michaelson P, Sjolander P, Johansson H. Factors predicting pain reduction in chronic back and neck pain after multimodal treatment. Clinical Journal of Pain 2004 Nov-Dec;20(6):447-54.

195. Middaugh SJ, Levin RB, Kee WG, et al. Chronic pain: its treatment in geriatric and younger patients. Archives of Physical Medicine & Rehabilitation 1988 Dec;69(12):1021-6.

196. Mohler SN, Tarrant JD. Multidisciplinary treatment of chronic craniomandibular disorder: a preliminary investigation. Cranio 1991 Jan;9(1):29-34.

197. Norrefalk J-R, Svensson O, Ekholm J, et al. Can the back-to-work rate of patients with long-term non-malignant pain be predicted? International Journal of Rehabilitation Research 2005 Mar;28(1):9-16.

198. Norrefalk J-R, Ekholm J, Borg K. Ethnic background does not influence outcome for return-to-work in work-related interdisciplinary rehabilitation for long-term pain: 1- and 3-year follow-up. Journal of Rehabilitation Medicine 2006 Mar;38(2):87-92.

199. Norrefalk J-R, Linder J, Ekholm J, et al. A 6-year follow-up study of 122 patients attending a multiprofessional rehabilitation programme for persistent musculoskeletal-related pain. International Journal of Rehabilitation Research 2007 Mar;30(1):9-18.

200. Norrefalk J-R, Ekholm K, Linder J, et al. Evaluation of a multiprofessional rehabilitation programme for persistent musculoskeletal-related pain: economic benefits of return to work. Journal of Rehabilitation Medicine 2008 Jan;40(1):15-22.

201. Olason M. Outcome of an interdisciplinary pain management program in a rehabilitation clinic. Work 2004; 22(1):9-15.

202. Patrick LE, Altmaier EM, Found EM. Long-term outcomes in multidisciplinary treatment of chronic low back pain: results of a 13-year follow-up. Spine 2004 Apr 15;29(8):850-5.

203. Polatin PB, Gatchel RJ, Barnes D, et al. A psychosociomedical prediction model of response to treatment by chronically disabled workers with low-back pain. Spine 1989 Sep;14(9):956-61.

204. Polatin PB, Cox B, Gatchel RJ, et al. A prospective study of Waddell signs in patients with chronic low back pain. When they may not be predictive. Spine 1997 Jul 15;22(14):1618-21.

205. Proctor TJ, Mayer TG, Gatchel RJ, et al. Unremitting health-care-utilization outcomes of tertiary rehabilitation of patients with chronic musculoskeletal disorders. Journal of Bone & Joint Surgery—American Volume 2004 Jan;86-A(1):62-9.

206. Proctor TJ, Mayer TG, Theodore B, et al. Failure to complete a functional restoration program for chronic musculoskeletal disorders: a prospective 1-year outcome study. [Erratum appears in Arch Phys Med Rehabil. 2005 Nov;86(11):2228]. Archives of Physical Medicine & Rehabilitation 2005 Aug;86(8):1509-15.

207. Protas EJ, Mayer TG, Dersh J, et al. Relevance of aerobic capacity measurements in the treatment of chronic work-related spinal disorders. Spine 2004 Oct 1;29(19):2158-66; discussion 67.

208. Rainville J, Ahern DK, Phalen L, et al. The association of pain with physical activities in chronic low back pain. Spine 1992 Sep;17(9):1060-4.

209. Rainville J, Ahern DK, Phalen L. Altering beliefs about pain and impairment in a functionally oriented treatment program for chronic low back pain. Clinical Journal of Pain 1993 Sep;9(3):196-201.

210. Rome JD, Townsend CO, Bruce BK, et al. Chronic noncancer pain rehabilitation with opioid withdrawal: comparison of treatment outcomes based on opioid use status at admission. Mayo Clinic Proceedings 2004 Jun;79(6):759-68.

211. Scerri M, de Goumoens P, Fritsch C, et al. The INTERMED questionnaire for predicting return to work after a multidisciplinary rehabilitation program for chronic low back pain. Joint, Bone, Spine: Revue du Rhumatisme 2006 Dec;73(6):736-41.

212. Skinner JB, Erskine A, Pearce S, et al. The evaluation of a cognitive behavioural treatment programme in outpatients with chronic pain. Journal of Psychosomatic Research 1990;34(1):13-9.

213. Skouen JS, Grasdal AL, Haldorsen EMH, et al. Relative cost-effectiveness of extensive and light multidisciplinary treatment programs versus treatment as usual for patients with chronic low back pain on long-term sick leave: randomized controlled study. Spine 2002 May 1;27(9):901-9; discussion 9-10.

214. Snow BR, Gusmorino P, Pinter I, et al. Multidisciplinary treatment of physical and psychosocial disabilities in chronic pain patients: a follow-up report. Bulletin of the Hospital for Joint Diseases Orthopaedic Institute 1988;48(1):52-61.

215. Snow BR, Gusmorino P, Pinter I. Multidisciplinary treatment for a chronic pain patient returning to work: a case report. Bulletin of the Hospital for Joint Diseases Orthopaedic Institute 1990;50(2):200-4.

216. Spinhoven P, Ter Kuile M, Kole-Snijders AMJ, et al. Catastrophizing and internal pain control as mediators of outcome in the multidisciplinary treatment of chronic low back pain. European Journal of Pain: Ejp 2004 Jun;8(3):211-9.

217. Stans L, Goossens L, Van Houdenhove B, et al. Evaluation of a brief chronic pain management program: effects and limitations. Clinical Journal of Pain 1989 Dec;5(4):317-22.

218. Sterner Y, Lofgren M, Nyberg V, et al. Early interdisciplinary rehabilitation programme for whiplash associated disorders. Disability & Rehabilitation 2001 Jul 10;23(10):422-9.

219. Storro S, Moen J, Svebak S. Effects on sick-leave of a multidisciplinary rehabilitation programme for chronic low back, neck or shoulder pain: comparison with usual treatment. Journal of Rehabilitation Medicine 2004 Jan;36(1):12-6.

220. Suoyrjo H, Hinkka K, Oksanen T, et al. Effects of multidisciplinary inpatient rehabilitation for chronic back or neck pain: a register-linkage study of sickness absences and analgesic purchases in an occupational cohort. Occupational & Environmental Medicine 2008 Mar;65(3):179-84.

221. Tollison CD, Kriegel ML, Downie GR. Chronic low back pain: results of treatment at the Pain Therapy Center. Southern Medical Journal 1985 Nov;78(11):1291-5.

222. Tollison CD, Kriegel ML, Satterthwaite JR. Comprehensive treatment of acute and chronic low back pain: a clinical outcome comparison. Orthopaedic Review 1989 Jan;18(1):59-64.

223. Tollison CD, Satterthwaite JR, Kriegel ML, et al. Interdisciplinary treatment of low back pain. A clinical outcome comparison of compensated versus noncompensated groups. Orthopaedic Review 1990 Aug;19(8):701-6.

224. Trief PM, Carnrike Jr CL, Drudge O. Chronic pain and depression: is social support relevant? Psychological Reports 1995 Feb;76(1):227-36.

225. van Wilgen CP, Dijkstra PU, Versteegen GJ, et al. Chronic pain and severe disuse syndrome: long-term outcome of an inpatient multidisciplinary cognitive behavioural programme. Journal of Rehabilitation Medicine 2009 Feb;41(3):122-8.

226. Vendrig AA. Prognostic factors and treatment-related changes associated with return to work in the multimodal treatment of chronic back pain. Journal of Behavioral Medicine 1999 Jun;22(3):217-32.

227. Vendrig AA, Derksen JJ, de Mey HR. MMPI-2 Personality Psychopathology Five (PSY-5) and prediction of treatment outcome for patients with chronic back pain. Journal of Personality Assessment 2000 Jun;74(3):423-38.

228. Vendrig AA, van Akkerveeken PF, McWhorter KR. Results of a multimodal treatment program for patients with chronic symptoms after a whiplash injury of the neck. Spine 2000 Jan 15;25(2):238-44.

229. Vines SW, Cox A, Nicoll L, et al. Effects of a multimodal pain rehabilitation program: a pilot study. Rehabilitation Nursing 1996 Jan-Feb;21(1):25-30.

230. Vines SW, Ng AK, Breggia A, et al. Multimodal chronic pain rehabilitation program: its effect on immune function, depression, and health behaviors. Rehabilitation Nursing 2000 Sep-Oct;25(5):185-91.

231. Vollenbroek-Hutten MMR, Hermens HJ, Wever D, et al. Differences in outcome of a multidisciplinary treatment between subgroups of chronic low back pain patients defined using two multiaxial assessment instruments: the multidimensional pain inventory and lumbar dynamometry. Clinical Rehabilitation 2004 Aug;18(5):566-79.

232. Vowles KE, Gross RT, Sorrell JT. Predicting work status following interdisciplinary treatment for chronic pain. European Journal of Pain: Ejp 2004 Aug;8(4):351-8.

233. Vowles KE, McCracken LM, Eccleston C. Processes of change in treatment for chronic pain: the contributions of pain, acceptance, and catastrophizing. European Journal of Pain: Ejp 2007 Oct;11(7):779-87.

234. Vowles KE, McCracken LM. Acceptance and values-based action in chronic pain: a study of treatment effectiveness and process. Journal of Consulting & Clinical Psychology 2008 Jun;76(3):397-407.

235. Vowles KE, McCracken LM. Comparing the role of psychological flexibility and traditional pain management coping strategies in chronic pain treatment outcomes. Behaviour Research & Therapy 2010 Feb;48(2):141-6.

236. Walsh DA, Radcliffe JC. Pain beliefs and perceived physical disability of patients with chronic low back pain. Pain 2002 May;97(1-2):23-31.

237. Walsh DA, Jane Kelly S, Sebastian Johnson P, et al. Performance problems of patients with chronic low-back pain and the measurement of patient-centered outcome. Spine 2004 Jan 1;29(1):87-93.

238. Wasan AD, Artin K, Clark MR. A case-matching study of the analgesic properties of electroconvulsive therapy. Pain Medicine 2004 Mar;5(1):50-8.

239. Williams AC, Nicholas MK, Richardson PH, et al. Evaluation of a cognitive behavioural programme for rehabilitating patients with chronic pain. British Journal of General Practice 1993 Dec;43(377):513-8.

240. Wong M, Rietzschel J, Mulherin D, et al. Evaluation of a multidisciplinary outpatient pain management programme based at a community hospital. Musculoskeletal Care 2009 Jun;241.

241. Wormgoor MEA, Indahl A, van Tulder MW, et al. The impact of aerobic fitness on functioning in chronic back pain. European Spine Journal 2008 Apr;17(4):475-83.

242. Wright A, Mayer TG, Gatchel RJ. Outcomes of disabling cervical spine disorders in compensation injuries. A prospective comparison to tertiary rehabilitation response for chronic lumbar spinal disorders. Spine 1999 Jan 15;24(2):178-83.

243. Zunin ID, Orenstein S, Chang M, et al. Comprehensive Pain Program outcomes evaluation: a preliminary study in Hawai'i. Hawaii Medical Journal 2009 Aug;68(7):158-617(2):106-20.

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 physical and emotional functioning and improve 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 physical and emotional functioning and improve overall quality of life.

Abbreviations

CARF	Commission on Accreditation of Rehabilitation Facilities
CBT	Cognitive Behavioral Therapy
ICPM	Interdisciplinary Chronic Pain Management
IMMPACT	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, M.D.	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, M.S., R.N.	University of Minnesota Medical Center, Fairview	Clinical Nurse Specialist for Pain Management Local content expert
Alex Malter, M.D., M.P.H.	Medicaid Medical Director Alaska	Recommended by SRC Public payer perspective
Nina McIlree, M.D.	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, Ph.D., L.P.	Fairview Pain Management Center	Pain Program Psychologist Local content expert
Steven Stanos, D.O.	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, Ph.D.	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

Third Party Payer Perspective:	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? 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?
Consumer Perspective	1. What has been your experience with Multidisciplinary Pain Programs (MPPs)? 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? **Information needs for patients** 8. What information about MPPs would help you or other patients make a decision about seeking care at an MPP? **Insurance coverage** 9. Did you have any problems with reimbursement or coverage from your insurance company?

Expert Perspective (Researchers and Clinicians)	**Patient access and referrals** 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? **Reimbursement issues** 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): – What is the impact of this practice on patients? What is the impact on MPPs? – Is this practice increasing? If so, why? **Administration and design of MPPs** 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) **Patient experiences** 11. What is the main MPP "critique" received from patients, especially those who "drop out"? **Research** 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)? **Feedback on protocol** 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). 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: a. Consensus statements regarding multidisciplinary pain programs b. Abstracts and/or preliminary study findings

Components of MPP	Examples and Indicators of Each Component
Medical	• 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	• 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)

Components of MPP	Examples and Indicators of Each Component
Physical Reconditioning	• 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 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, 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	• 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

Criteria for Inclusion/Exclusion of Studies in the Review

The two primary criteria that were used for inclusion/exclusion of studies pertain to population (i.e., adults with chronic noncancer pain) and treatment (multidisciplinary pain program defined as including at least four components – medical, behavioral, physical reconditioning, and educational). We included studies of any sample size, any design (RCT, controlled clinical trial, uncontrolled observational trial, and case reports/series) and studies that report any clinical outcome (e.g., quality of life, functioning, disability, and pain).

Studies were excluded based on the following exclusion criteria:

- Patients with cancer
- Patients with acute pain (e.g. pain less than 3 months and post-surgical pain)
- Patients who are ages 18 years or younger
- MPP studied does not include all four components: medical, behavioral, physical reconditioning, and educational.

Appendix D. Included Studies

Table D-1. 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	

Table D-1. 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 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
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

Table D-1. 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
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); 18-39% work readiness	disabling low back trouble: 44 to 50% 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 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

Table D-1. 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
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)
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

Table D-1. 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 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 tissue, 35% mechanical spine, 29% neuropathic, 14% other	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)

Table D-1. 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
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

Table D-1. 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
Cassisi 1989[109]	average pain duration of 24 to 60 months, 49% had surgery prior to referral to the pain clinic (average of 1.3 surgeries per patient), 13% were employed	average pain duration of 24 to 60 months, 51% to 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	severe chronic low back pain	4 comparison groups: pts whose participation was not approved by insurance, pts who declined participation, 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	

Table D-1. 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
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)	
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	

Table D-1. 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
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 diagnosis of substance abuse or dependence		comorbid chronic non-cancer pain and substance abuse; 61% MSK pain, 42% headache, 42% visceral pain, 20% FM; 66% opioid abusers; 16% alcohol and opioids	pseudoaddiction: drug-seeking behavior better explained by uncontrolled pain rather than true substance abuse
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

Table D-1. 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
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;
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.

Table D-1. 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
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
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	

Table D-1. 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
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 D-1. 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) exclusion: symptomatic back pain (spondylitis or tumor); major psychological issues	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	

Table D-1. 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[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	
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

Table D-1. 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 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 functional limitations remained		chronic disabling occupational spinal disorders (CDOSD)	able to speak English or Spanish, consented to and completed prescribed functional restoration
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	

Table D-1. 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
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 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	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 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)	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 consent form

Table D-1. 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
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 (avg. 19 mos.), avg. 0.4 spinal surgeries	chronic disabling low-back pain	no evident surgically remediable lesion, no cardiovascular comorbidity restricting activity, no evidence of psychosis or severe personality disorder 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

Table D-1. 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
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 interventional pain procedures"		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 D-1. 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
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	

Table D-1. 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
Jensen 1994[159]	mean pain duration = 5.26 years (range 3 months to 32 years); 16% working full- or part-time; 16% had active litigation pending regarding pain		varied: 46% low back pain, 15% head, 13% leg, 10% neck	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 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

Table D-1. 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
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% with previous surgery	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 previous years; 15% with previous surgery	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
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

Table D-1. 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
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 duration 3.7 years); 39% received back surgery, 28% used supportive equipment for ambulation; comorbidities included 40-46% with phobias, 30% with depressive disorder	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 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 intervetion. exclusion: did not give informed consent, not able to answer questionnaires independently, pain was localized over almost the whole body or history of cancer

Table D-1. 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
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 years for women with moderate LBP, 8.8 years for men with severe LBP, and 13.5 years for women with severe LBP	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
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	

Table D-1. 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
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 Pharma: willingness to sign informed consent
Man 2007[177]	median pain duration 46 months (range 12-333 mos.)		58% back pain, 22% limbs	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 Rentenversicherug 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
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

Table D-1. 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 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 respond to surgical treatment (if indicated); persistence of severe functional and psychosocial barriers to recovery		chronic occupational spinal disorders	English or Spanish speaking or translation available
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

Table D-1. 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 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
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	

Table D-1. 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
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 compensation; average duration of pain was 14.2 years, average number of prior surgeries for pain was 3.5		chronic pain; 53% Lower back pain, 17% headaches	

Table D-1. 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 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 D-1. 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

Table D-1. 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
Polatin 1997[199]	average 18 mos. disability before program; primary and secondary nonsurgery care failed to resolve disability and pain; (further) surgery determined to be unnecessary by 2 or more physicians		chronic low back pain	
Proctor 2004[200]	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		chronic disabling occupational musculoskeletal disorders (CDOMD)	MSK injury claim without adequate recovery; speak English or Spanish
Proctor 2005[201]	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		chronic disabling occupational musculoskeletal disorders (CDOMD)	speak English or Spanish
Protas 2004[202]	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		chronic work-related spinal disorders	treatment completers only; exclusion: pts taking medication limiting heart rate response, pts not treated for a cervical or lumbar disorder

Table D-1. 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 1992[203]	average 17 mos. since injury; 19% 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
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	

Table D-1. 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
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
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

Table D-1. 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
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% received back surgery, 28% used supportive equipment for ambulation; comorbidities included 40-46% with phobias, 30% with depressive disorder	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 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	

Table D-1. 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
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, those at work less than 3 months in a randomly selected year plus or minus three years between 1994 and 2002
Tollison 1985[216]	average 32 months duration (range 5 to 96); average 2.1 major back operations		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 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

Table D-1. 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
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
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

Table D-1. 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
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 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		multiple; 57% spine-related	excluded for medical or psychiatric problems not under control; "if substance abuse is an issue, pain 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

Table D-1. 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
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, postsurgical pain), 36% diagnosed with FM		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)
Vowles 2010[230]	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

Table D-1. 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
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 D-1. 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	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. 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 opiod analgesics prescribed as treatment for drug dependence, or not prescribed for patient.

Table D-1. 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
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. 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 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	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. 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).

Table D-1. 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
Wong 2009[235]	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
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 patho-physiological 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

Table D-1. 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
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 D-2. 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)

Table D-2. 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
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 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	

Table D-2. 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
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, marital/family therapy	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 D-2. 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	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

Table D-2. 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 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 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	2 less intensive programs totaling 24 hours of treatment time: active physical training and traditional back school OR active combined psycho-physical program

Table D-2. 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 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

Table D-2. 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 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 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	2 less intensive programs totaling 24 hours of treatment time: active physical training and traditional back school OR active combined psycho-physical program

Table D-2. 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[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

Table D-2. 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[97]	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, 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

Table D-2. 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 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

Table D-2. 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
Bliokas 2007[98]	presenters included medical and dietetics disciplines (among others); education items included medication issues	presenters included psychology discipline (among 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	graded activity including 1-hour exercise session of walking and stretching, supervised by PT; OT, PT, and exercise science presentations	psychoeducational group therapy (see other components for content)	approximately half the MPP group got an additional "Graded Exposure" 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	8 weeks, 2 days per week (total 66.5 hours)	wait-list for treatment program

Table D-2. 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
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 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	

Table D-2. 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
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 pathophysiology and medications	group therapy facilitated by psychologist; 1-hr group education and psychotherapy session; psychologist lectures on sleep hygiene, coping strategies, stress and mood management	exercise specialist and physical therapist offered education on adverse effects of deconditioning and the dynamics of pain and maintaining a health spine	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 plateaued, or pt was non-compliant	group of 4-6 pts, used book Managing Pain Before it Manages You by M Caudill as basis of weekly group discussion

Table D-2. 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 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 D-2. 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	

Table D-2. 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
Carleton 2010[108]	initial clinical exam; treatment team included pt's family physician, education on pain, process of tissue healing, and how fitness and nutrition impact healing	1 hr per week of psychological counseling; 1 hr of relaxation-based pain management	graded activity, general conditioning, work-hardening; team included PT, OT, kinesiologist	included with medical and behavioral		6-weeks	
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

Table D-2. 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 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 6-10 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"	

Table D-2. 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 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	

Table D-2. 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]	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 Center B: Medical assessment; reduction/elimination of opioids, tranquilizers, barbiturates; epidural steroid and trigger point injections or sympathetic nerve blocks offered as medically indicated	Center A: group therapy to discuss pain and stress management issues and to reinforce functional improvement; group and individual relaxation training Center B: Group and individual therapy, biofeedback when indicated, group sessions with families to address family issues related to chronic pain and its management	Center A: group and individual PT sessions to teach improved body mechanics and increase strength and ROM, with prescription of home exercises Center B: daily group aerobics and individual exercises to increase physical function and stamina	Center A: Psychologist and Physician alternated presenting educational lectures about different aspects of pain and its management Center B: Psychologist-led educational groups		Center A: 6-10 visits of 4-5 hours each Center B: 3 days/week for 5 weeks	

Table D-2. 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 2000[50]	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 Center B: Medical assessment; reduction/elimination of opioids, tranquilizers, barbiturates; epidural steroid and trigger point injections or sympathetic nerve blocks offered as medically	Center A: group therapy to discuss pain and stress management issues and to reinforce functional improvement; group and individual relaxation training Center B: Group and individual therapy, biofeedback when indicated, group sessions with families to address family issues related to chronic pain and its management Center C: daily 90-minute psychology group session plus 90-minutes weekly of individual therapy including relaxation methods and biofeedback	Center A: group and individual PT sessions to teach improved body mechanics and increase strength and ROM, with prescription of home exercises Center B: daily group aerobics and individual exercises to increase physical function and stamina 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	Center A: Psychologist and Physician alternated presenting educational lectures about different aspects of pain and its management Center B: Psychologist-led educational groups 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		Center A: 6-10 visits of 4-5 hours each Center B: 3 days/week for 5 weeks Center C: inpatient, generally for 3 weeks (but home on the weekend), 7 hours of treatment per day	

Table D-2. 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
	indicated Center C: Led by physicians trained in 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		stretching and strengthening and use of treadmill				
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)	

Table D-2. 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
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, behavioral psychologist integrated all therapeutics	prescriptions for exercise	education on difference between "hurt" and "harm"; medical vs. non-medical components of illness behavior	some patients also had access to Field Consultants—visited home and workplace, integrated with physical assessments, observation of home environment, etc.	not reported	
Crisostomo 2008[116]	Discontinuation or reduction in benzo-diazepines 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	

Table D-2. 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
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 psychologist) to determine suitability	relaxation training, group and individual therapy	daily aerobic training and ROM exercises, resistance training every-other day	"educational classes" and family education		not described	

Table D-2. 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
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

Table D-2. 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
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 individual rehab sessions; team included several PTs and an OT who taught minimization of work-related risks and ergonomics	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
Dersh 2008[119]	medically directed treatment program	individual counseling and group therapeutics	quantitively 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	

Table D-2. 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
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/biofeedback	PT, OT	family education	detox from narcotics	4 weeks	
Dunstan 2007[121]	education on neuro-physiological 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 management, appropriate assertiveness, communication, conflict resolution, etc.)	daily walking plus exercises and stretches increasing according to time and/or quota-based schedule; use of graded everyday tasks to build functional tolerances; pacing	education on biopsychosocial model of pain disability, acute vs. chronic pain, links between thoughts, feelings, behaviour, and pain; physiological and psychological benefits of exercise; safe postures and body mechanics	groups; considered "a light multidisciplinary WRAP" (Work Related Activity Program)	6 weeks; one half-day per week	
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	

Table D-2. 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
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 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	

Table D-2. 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
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 treatment program	individual counseling and group therapeutics	quantitively directed exercise progression supervised by PT and OT	education focused on disability management, vocational reintegration, stress management, improvement in coping skills, future fitness maintenance		not described	

Table D-2. 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
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 physio-therapist, physical educator, occupational therapist, and recreation officer	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 D-2. 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
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	

Table D-2. 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
Gagnon 2009[134]	psychological care: "conversations" and relaxation therapy	muscle-strengthening, cardiovascular, active stretching, proprioceptive exercises	information and guidance on physiopathological mechanisms of non-specific CLBP, posture, and ergonomics	contact made with workplace to make appropriate changes to prepare for return to work	5 weeks, 20 days 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	

Table D-2. 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
Gatchel 1999[139]	medically directed treatment program	individual counseling and group therapeutics	quantitively directed exercise progression supervised by PT and OT	education focused on disability management, vocational reintegration, stress management, improvement in coping skills, future fitness maintenance		3 weeks	
Gatchel 2002[140]	pretreatment eval with physician; medical and medication management	group counseling, individual psych management (multimodal cognitive-behavioral methods of pain mangement)--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

Table D-2. 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
Gatchel 2010[142]	medically directed program; medical assessments; medication management/controlling opioid dependence	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 coping skills	post-intervention: long-term care plan for maintenance of skills learned in program, controlling opioid dependence, prevention of recurrent disability by expedited management of pain flare-ups	not reported	
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	

Table D-2. 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
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 2009[28]	education on headache patho-physiology, 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	group-based stress 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	group exercise sessions supervised by an exercise therapist twice a week for 2 hours including aerobic exercise, stretching, and light weight training	described in other components	groups of 6-8 pts; assigned to practice 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	2 times per week for 6 hours each time for a total of 16 treatment days	two different groups from a prior study: a 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

Table D-2. 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
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, co-ordination, breathing and muscular tension; individual programs for walking and stretching	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
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

Table D-2. 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
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 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	

Table D-2. 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
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	

Table D-2. 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
Hooten 2007[19]	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 PT with increased intensity over course of program; daily OT addressing impairments of ADLs	Chemical health education, daily cognitive-behavioral group educational sessions		3 weeks, 8 hrs per day, 5 days per week	

Table D-2. 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
Hooten 2009[151]	Discontinuation or reduction in benzo-diazepines, 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	

Table D-2. 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
Hooten 2009[152]	Discontinuation or reduction in benzo-diazepines, 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 PT with increased intensity over course of program; daily OT addressing impairments of ADLs	Chemical health education, daily cognitive-behavioral group educational sessions		3 weeks	
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	

Table D-2. 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
Huge 2006[154]	assessment by an evaluation group including physicians (anesthesi-ologists, 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 workstations (work hardening)	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"
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

Table D-2. 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 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

Table D-2. 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 1998[157]	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 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	

Table D-2. 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 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 complete 4 weeks rather than 3)	
Jensen 2003[14]	UW: clinical assessment, medication management (focus on decreasing and eliminating use of sedatives and opioids) FM: tapering of opioid and sedative-hypnotics when appropriate, initial clinical assessment by rheumatologist	UW: individual cognitive-behavioral psychotherapy; group coping skills training FM: cognitive-behavioral therapy	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 FM: Physiotherapy, occupational therapy	UW: group pain education FM: "education"		UW: 3-weeks, 5.5 days per week FM: 4 weeks, 5 days per week	

Table D-2. 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 2004[17]	UW: clinical assessment, medication management (focus on decreasing and eliminating use of sedatives and opioids) FM: tapering of opioid and sedative-hypnotics when appropriate, initial clinical assessment	UW: individual cognitive-behavioral psychotherapy; group coping skills training FM: cognitive-behavioral therapy	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 FM: Physiotherapy, occupational therapy	UW: group pain education FM: "education"	UW: Pt. family members asked to participate during last two days FM: weekly one-hour educational sessions for family members	UW: 3-weeks, 5.5 days per week FM: 4 weeks, 5 days per week	
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	

Table D-2. 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
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

Table D-2. 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
Kaapa 2006[163]	rehab team included rehabilitation medicine physician; back 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)	cog-behav stress management methods and applied relaxation (10 hours total)	PT and occupational PT taught total of 11 hours of back school; 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	back school including anatomy, functions of muscles and spine, active treatment methods	home-exercise period	8 weeks comprising 70 hours of treatment: intensive period 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	individual PT: 10 one-hour treatment sessions over 6 to 8 weeks; each session included 30- to 40-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)

Table D-2. 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
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	
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	

Table D-2. 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
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 activity and decreasing pain behavior; weekly sessions with psychologist; In addition, there were three 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 led by the same behavior therapist using a book about pain written for pain	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	In conditions other than Operant Behavioral Treatment as usual: 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 D-2. 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
		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 components")--this was considered Operant Behavioral treatment as usual and was provided individually, rather than in groups					

Table D-2. 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
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	

Table D-2. 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
Lang 2003[171]	providers included a physician , who provided education components	1 hour per session of cognitive-behavioral therapy; included group and individual counseling; 0.5 hours of progressive muscle relaxation training provided by psychologist	1.5 hours per session of "restorative exercise therapy" conducted and supervised by one of the sport teachers , 0.5 hours of individual physiotherapy	0.5 hours per session of education on anatomy, physiology, and movement-related basics of the back and evidence-based knowledge about the effectiveness of back-related therapies	program organized "by cooperation of local health-care providers in the community with 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	20 days at the rate of 3 days per week, 4 hours per day	usual care provided by 35 community physicians and physiotherapists
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)

Table D-2. 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
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, 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	
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

Table D-2. 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
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 psycho-education each day	
Magnusson 2004[27]	assessment and medical follow-up by neurologist; symptomatic medications for headache; advice available from nursing coordinator	group therapy including self-management group on pain-coping strategies; some optional groups available as well, including sleep, relaxation, family, and "rebuilding self and relationships"	instruction in posture and exercise by a kinesiologist; physiotherapy as considered appropriate by the program PT and physician	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 appropriate to situation, counseling and education from a nurse

Table D-2. 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
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

Table D-2. 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
Maruta 1990[179]	Medication management, complete medical evaluation at admission	cognitive/operant conditioning, group psychotherapy, biofeedback-relaxation, supportive psychologic treatment	physical rehabilitation measures	"education": further described in three Swanson et al. publications	pts with provisional chemical dependency diagnoses are directed to participate in daily chemical dependency group; key goal of treatment is to "reduce the intake of medication to a minimum"	variable; mean for first 249 completers was 23 days	
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						

Table D-2. 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 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	
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/ hardening	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

Table D-2. 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 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/ hardening	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	
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	

Table D-2. 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
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 including diagnostics and withdrawal from narcotics	biofeedback, pacing, cognitive coping techniques, stress management techniques, communication skills	extensive daily exercise, walking, stationary cycling; OT including use of proper posture and body mechanics	included with behavioral		inpatients: 3-4 weeks; outpatients: 4 hours per week for 8 weeks	

Table D-2. 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
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	

Table D-2. 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 2005[192]	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	pts rejected for lack of space

Table D-2. 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 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 D-2. 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

Table D-2. 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
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 portion includes ergonomics; after first two weeks, emphasis is on physical fitness, mostly offered in groups ("most of the patients have already received physical therapy and do not get individual physical therapy"; some do get manipulation or other forms of "special physical therapy"	first two weeks of program are "pain school": see other components for description		7 weeks	

Table D-2. 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
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.
Pfingsten 1997[74]	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	5 weeks, 7 hours per day	

Table D-2. 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
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 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

Table D-2. 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
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)

Table D-2. 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
Rome 2004[205]	Discontinuation or reduction in opioids initiated and coordinated by a physician after admission	cognitive-behavioral model served as basis for treatment, including biofeedback, relaxation training, stress management, and elimination of pain behaviors	physical reconditioning, OT for job, leisure, and home activities	Chemical health education, pain management training		3-week "intensive"	
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 pharma-cotherapy 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

Table D-2. 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
Skinner 1990[207]	staff included anesthetist and a GP who taught autohypnosis; education on gate control theory of pain	staff included two clinical psychologists; pts taught cognitive skills to deal with 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	staff included a PT; each session included 1 hour physical exercise designed to improve general fitness and confidence in performance of physical activity	included with other components (skills training and education on pain)	when possible, close friends or relatives were included in the lifestyle planning group sessions; delivered in groups of approx 9	one afternoon per week for 7 consecutive weeks	
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)

Table D-2. 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
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-admission	psychotherapy, psychosocial training in time management, leisure planning, and assertiveness; medication management; biofeedback training	general conditioning exercises, strengthening, stretching, connective tissue massage, pool therapy, weight-reduction diet; OT program including activities of daily living training	included in behavioral and PT		not reported	

Table D-2. 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
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 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	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 D-2. 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
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	

Table D-2. 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
Storro 2004[214]	evaluated at intake by physical medicine specialist	group meetings with MD, PT, and 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"	physical exercises tailored to individual in intensity and dose	4 hours education on "mechanisms of pain 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"	groups of 8-10 pts	4 weeks, meeting 3x per week for 2 hours; followed by less-structured consultations for 8 weeks	Treatment as usual (GP refers pt to PT, 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	

Table D-2. 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
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	
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	

Table D-2. 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 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 referral; "if appropriate" pts are placed on a medication withdrawal program monitored by staff nurse	training in relaxation using biofeedback; group and individual psychological counseling and individual vocational counseling	PT program of individualized exercise to promote flexibility, strength and aerobic fitness	OT program of education in back protection and body mechanics		4-6 weeks, 5 days per week, 6-7 hrs per day	

Table D-2. 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
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)	

Table D-2. 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
Turner-Stokes 2003[76]	program staff includes medical staff, all pts received initial clinical assessment; physician provided 10 hrs of direct patient contact plus 8 hours of meetings/ documentation	program staff includes psychologist, who provided 24 hrs of direct patient contact plus 8 hours of meetings/documentation; program was CBT based, included relaxation and use of cognitive coping strategies	program staff includes a PT and an OT who each provided 8 hrs of direct patient contact plus 8 hours of meetings/documentation; pts were encouraged to exercise and pace their daily activities at home	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 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

Table D-2. 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
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, reconceptual-ization, 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 members provided group sessions; clinical assessment before treatment	group sessions included discussion/ training to identify and modify maladaptive behaviors, enhance adequate coping skills, and improve emotional awareness	graded activity to eliminate inappropriate pain behaviors and restore muscle strength, endurance, and aerobic fitness; sports including squash and swimming	group sessions, back school, stress management	Group participation (group size ~6); stated to be based on Mayer and Fordyce	4 week duration	

Table D-2. 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
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 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	

Table D-2. 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
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 D-2. 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 psycho-educational 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	

Table D-2. 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 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 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	
Walsh 2002[231]	facilitators included pain nurse specialist, sessional input from a pharmacist 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	

Table D-2. 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
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 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	

Table D-2. 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
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)	

Table D-2. 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
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 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	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 D-2. 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
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

Table D-2. 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
Wong 2009[235]	Treatment team includes anesthetist who delivers content on medication usage and takes part in the introductory session	Treatment team includes clinical psychologist who delivers content on rationale for self-management, relaxation skills, distraction, thoughts and feelings, sleep management, coping with flareups, planning for the future, and family involvement	Treatment team includes physical therapist who delivers content on pain mechanisms, 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	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 completed and content delivered on assertiveness training and topics chosen by patients	eight weeks, with one half-day meeting per week; almost entirely group-delivered	
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	

Table D-2. 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
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 D-3. 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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
France 1991[132]	CSF beta-endorphin concentration pre- and post-treatment	Pain	pain change	percentage of pain relief	1 month post treatment
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/ healthcare 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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		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
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
		Pharmacoeconomic/ 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)

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		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)
		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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
				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
				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/ healthcare 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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
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 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")	dismissal, 3-yr f/u
		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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		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)
		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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		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, diagnosis, compensation, time missed work, job type	Participant disposition	treatment completion	completion, drop out, failed to enter	(blank)
		Role functioning	treatment success	working 1 year post treatment	1 year
Cassisi 1989[109]	Participants vs. control groups	Pain	Pain	MPQ	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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		Pharmacoeconomic/ healthcare 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)
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)

Table D-3. 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	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
		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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
			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
		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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
			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
		Physical Functioning	Functional capacity	ability to do work, do yardwork/shop, socialize, recreate, exercise, sleep	1 to 5 yrs following treatment

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		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/ healthcare 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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
				Rathus Assertiveness Schedule (RAS)	before and after treatment; also 2-5 mos before treatment for the 32 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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		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
			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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
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)
		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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
			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 leisure time physical activities	questionnaire	baseline, 3-month, 12-month follow-up
		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)

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
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)
		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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
			physical functioning	10-minue 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)
		Pain	pain intensity	VAS	pre- and post-treatment (3-6 months later)
		Pharmacoeconomic/ healthcare 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)

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		Pain	Subjective pain intensity	scale 0 to 10	intake, discharge (or 3-weeks later, for control group)
		Pharmacoeconomic/ healthcare 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/ healthcare 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)
			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/ healthcare 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-Sørenson 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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
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
		Role functioning	lost work time after reinjury	self-reported lost work time due to recurrent or new injury	within 1 year of treatment completion
			work retention	not specified	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[126]	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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		Pharmacoeconomic/ healthcare use	medication consumption	no analgesics, NSAIDs, common analgesics, narcotics	pre-treatment, post-treatment, 6-mo f/u
Elkayam 1996[125]	improvement vs. no improvement for marital status, unemployed/employed, pain location, previous surgery, psychological factors, personality traits (including personality disorders, familial problems, dysthmia, anxiety, OCD, good functioning), "secondary gains" as assessed by psychologist average scores on the following scales are reported by outcome category (poor, moderate, good): centrality of back pain in patient's life, extent of expectations from treatment, extent of support	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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		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
Fricton 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	Craniomandibular Index	pretreatment, 6 month f/u
Chapman 1996[112]	Treatment Helpfulness Questionnaire response correlations	Coping	Coping	Ability to cope with pain and related problems, ranging from 1 to 5	pre-treatment and follow-up (3-6 mos)
		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)

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
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	Depressivitäs-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	"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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
			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
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)

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
Pfingsten 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	Depressivitäs-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
		Role functioning	Work status	back to work ratio	12-mo f/u
Mayer 1998[75]	discectomy, fusion, discectomy control, fusion control	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
			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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
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 D-3. 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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		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
		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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		Pain | Emotional Functioning	Pain severity, perceived interference, affective distress, perceived control over life, support form significant others, responses from significant others, performance of a set of common activities	Multidimensional Pain Inventory	pretreatment, post-treatment, six-month follow-up
		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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		Pharmacoeconomic/ healthcare 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/ 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	maintained employment during entire post-treatment period	1-yr f/u
			work return	any return to work	1-yr f/u
		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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
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
		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-minue 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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		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
			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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
				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
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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		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/ healthcare 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
		Participant ratings of global improvement and satisfaction with treatment	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
		Role Functioning | Pharmacoeconomic/ healthcare 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
Bendix 2000[78]	treatment group, drop-outs	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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		Pharmacoeconomic/ healthcare 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
		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
Sterner 2001[213]	0	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
		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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		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
			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/ healthcare 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
Skouen 2002[208]	treatment and control groups; gender	Pharmacoeconomic/ healthcare use	costs	economic returns for society from treatment at the clinic vs. treatment as usual	(blank)

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		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 D-3. 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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		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
			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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
			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; sense of control over pain; physical and social activity inside and outside the home, pain severity	WHYMPI	baseline, post-treatment, 3-mo f/u, 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/ healthcare 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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
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 f/u for FM sample, 6 mos for UW)
		Pain	Pain severity	average, worst, least pain intensity on 0-10 scale	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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		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
			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
		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	any period of work during post-treatment year; also measured months worked since treatment	1-yr f/u

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
			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
		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
Mayer 2002[186]	cervical fusion status (yes/no)	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	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
Glenn 2003[143]	changes over course of treatment	Emotional Functioning	Depression	BDI	pre-treatment, mid-treatment, post-treatment
			Pain self-management stage of change	PSOCQ	pre-treatment, mid-treatment, post-treatment

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		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/ healthcare use	Medication	MQS	pre-treatment, post-treatment, 3-mo f/u, 12-mo f/u
		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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		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/ healthcare 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
			return to work	% reporting	1-yr f/u
Olason 2004[196]	none reported	Emotional Functioning	Anxiety/depression	numeric rating scale (self-estimated)	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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
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
		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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
			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
			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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
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
		Pharmacoeconomic/ 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 D-3. 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
		Pharmacoeconomic/ healthcare 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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
			Psychological dysfunction	SCL-90	baseline, after 8-weeks treatment (or no-treatment), 4-mo later
		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

Table D-3. 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	pre-treatment, post-treatment, 6-mo f/u
				WHYMPI	pre-treatment, post-treatment, 6-mo f/u
		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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		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
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)

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		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, disability rating index, etc.	Role functioning	Return to work, hours worked per day	reported by local social insurance office	1-yr f/u
Keogh 2005[165]	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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		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
			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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
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
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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		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
			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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		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
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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		Pharmacoeconomic/ 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
			subjective working capacity	scale of 0 to 10	baseline, post-treatment, 6-mo f/u, 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
		Pharmacoeconomic/ healthcare use	reduction in analgesic use	self-reported consumption	pre-treatment, 3-yr f/u
		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
		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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		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)
			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)

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
			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	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
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/ healthcare use	Medication	medical records	entry, discharge
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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		Pharmacoeconomic/ healthcare 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/ 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
			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	Center for Epidemiological Studies-Depression Scale (CES-D)	admission, dismissal
			pain catastrophizing	Coping Strategies Questionnaire (CSQ-C)	admission, dismissal
		Pain	pain severity and affective characteristics	MPI	admission, dismissal

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		Pharmacoeconomic/ healthcare use	Medication use	% using opioids, muscle relaxants, NSAIDS, benzodiazepines, antidepressants, mood stabilizers, antispychotics	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
		Pharmacoeconomic/ healthcare 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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
			catastrophizing	PCS	pre-treatment, post-treatment, 3-mo f/u
			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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		Pain	pain intensity	VAS	pre-treatment, post-treatment
		Physical Functioning	activity level	Activity diary	pre-treatment, post-treatment
			mobility	six-minute walk test	(blank)
			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	Work disability and work resumption	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	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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
			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
Suoyrjo 2008[215]	neck vs. back pain vs. non-rehab; adjusted for sex, age, occupational status, and rehab year	Pharmacoeconomic/ healthcare 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
		Role functioning	work ability	>= 25%	baseline, 6-mo f/u

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
Ersek 2008[127]	treatment vs. control only	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
		Pharmacoeconomic/ healthcare 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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		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/ healthcare 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
		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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
			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
		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	SF-36	admission, dismissal
Mayer 2008[187]	Chronic Widespread Pain status (yes/no)	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	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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
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	any period of work during post-treatment year	1-yr f/u
			work retention	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 performing activities in spite of pain	PSEQ	pre-treatment, 18-wk f/u, 44-wk f/u
		Pharmacoeconomic/ healthcare 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/ healthcare use	Medication use	% using opioids, muscle relaxants, NSAIDS, benzodiazepines	admission, dismissal

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
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
			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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
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
		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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
				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[166]	0	Emotional Functioning	psychological variables	BDI	1-yr f/u
				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/ healthcare use	New surgery	(blank)	1-yr f/u
			Seeking treatment from new provider	(blank)	1-yr f/u

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		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/ healthcare 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 providers seen for pain; average pain VAS rating	1 year post-treatment
			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)

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		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
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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
			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
Gunreben-Stempfle 2009[28]	none reported	Emotional Functioning	depressive symptoms	CES-D	pre-treatment, 22-week f/u
		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
Angst 2009[21]	none reported	Coping	Coping Strategies	CSQ	entry, discharge, 6-mo f/u

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		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 D-3. 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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		Physical Functioning	physical functioning, health perception, social functioning	SF-36	admission, dismissal
Vowles 2010[230]	correlations with outcome variables calculated for: Brief Pain Coping Inventory - 2 (BPCI-2) subscales Pain Management and Psychological Flexibility	Emotional Functioning	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
		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)

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
			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)
		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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
		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
			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)

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
			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 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/ 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
			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

Table D-3. Outcomes (continued)

Citation	Patient Characteristics Tested	Outcome Domain	Outcome	Outcome Measure	Outcome Timing
			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 D-4. 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

Table D-4. Study details (continued)

Citation	Study/Center Name	Country	Funding Source for Study	N	Number of Patients Lost to Followup	Setting (in-patient/out-patient)
Bendix 1995[81]	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, 3 lost at 4-mo f/u (leaving 106 with full data)	outpatient
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

Table D-4. Study details (continued)

Citation	Study/Center Name	Country	Funding Source for Study	N	Number of Patients Lost to Followup	Setting (in-patient/out-patient)
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 (private foundations, etc.)	138	of 138 randomized, 11 never started, 21 dropped out during treatment, 7 lost at 12-mo f/u	outpatient
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

Table D-4. Study details (continued)

Citation	Study/Center Name	Country	Funding Source for Study	N	Number of Patients Lost to Followup	Setting (in-patient/out-patient)
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 (initial cohort was 123)	outpatient
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

Table D-4. Study details (continued)

Citation	Study/Center Name	Country	Funding Source for Study	N	Number of Patients Lost to Followup	Setting (in-patient/out-patient)
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 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)	2 outpatient, one inpatient (Center C)
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

Table D-4. Study details (continued)

Citation	Study/Center Name	Country	Funding Source for Study	N	Number of Patients Lost to Followup	Setting (in-patient/out-patient)
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 and were not followed	outpatient
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

Table D-4. Study details (continued)

Citation	Study/Center Name	Country	Funding Source for Study	N	Number of Patients Lost to Followup	Setting (in-patient/out-patient)
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 reevaluation 1yr later; of 111 seen at follow-up, 76% completed all post-treatment instruments and were included in the study	outpatient
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

Table D-4. Study details (continued)

Citation	Study/Center Name	Country	Funding Source for Study	N	Number of Patients Lost to Followup	Setting (in-patient/out-patient)
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 Medical Center	USA	NIH and Congressionally Directed Medical Research Program's Peer Review Medical Research Program	30 MPP, 36 standard treatment	0 (preliminary results here--not all follow-up data has been collected for all patients because it was not yet 6 or 12 months from their treatment date)	not reported
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

Table D-4. Study details (continued)

Citation	Study/Center Name	Country	Funding Source for Study	N	Number of Patients Lost to Followup	Setting (in-patient/out-patient)
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	Reumatikerföbundet, Center for Studies in Health and Quality of Life, Mid Sweden University, Swedish Medical Research Council, Department of Rehabilitation Medicine at Karolinska Hospital	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 assessment 4	outpatient

Table D-4. Study details (continued)

Citation	Study/Center Name	Country	Funding Source for Study	N	Number of Patients Lost to Followup	Setting (in-patient/out-patient)
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

Table D-4. Study details (continued)

Citation	Study/Center Name	Country	Funding Source for Study	N	Number of Patients Lost to Followup	Setting (in-patient/out-patient)
Hooten 2009[152]	Mayo Clinic: Pain Management Center/Comprehensive Pain Rehabilitation Center	USA	no institutional or corporate funds	1241	~15% did not complete program	outpatient
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

Table D-4. Study details (continued)

Citation	Study/Center Name	Country	Funding Source for Study	N	Number of Patients Lost to Followup	Setting (in-patient/out-patient)
Jensen 2004[17]	University of Washington Multidisciplinary Pain Center and St. Joseph's Health Care Arthritis Institute multidisciplinary fibromyalgia program (London, Ontario)	US and Canada	Partial NIH	110 Washington, 319 Fibromyalgia	32 UW, 102 FM	outpatient
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

Table D-4. Study details (continued)

Citation	Study/Center Name	Country	Funding Source for Study	N	Number of Patients Lost to Followup	Setting (in-patient/out-patient)
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
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

Table D-4. Study details (continued)

Citation	Study/Center Name	Country	Funding Source for Study	N	Number of Patients Lost to Followup	Setting (in-patient/out-patient)
Mangels 2009[178]	Rehazentrum Bad Pyrmont 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
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

Table D-4. Study details (continued)

Citation	Study/Center Name	Country	Funding Source for Study	N	Number of Patients Lost to Followup	Setting (in-patient/out-patient)
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 f/u data (leaving 108 with 3 out of data points and 84 with complete data)	residential or inpatient-hospital
Michaelson 2004[189]	Saxnäsgårdens Rehabilitation Center	Sweden	VINNOVA	315	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

Table D-4. Study details (continued)

Citation	Study/Center Name	Country	Funding Source for Study	N	Number of Patients Lost to Followup	Setting (in-patient/out-patient)
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
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

Table D-4. Study details (continued)

Citation	Study/Center Name	Country	Funding Source for Study	N	Number of Patients Lost to Followup	Setting (in-patient/out-patient)
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 Management, University of Texas Southwestern Medical Center at Dallas	USA	partial NIH and Sid Richardson Foundation	127 completers	62	outpatient (?) not specified
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[26]	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

Table D-4. Study details (continued)

Citation	Study/Center Name	Country	Funding Source for Study	N	Number of Patients Lost to Followup	Setting (in-patient/out-patient)
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 Hospital for Joint Diseases Orthopaedic Institute	USA	none reported	200	38%	inpatient and outpatient
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
Sterner 2001[213]	University Hospital of Northern Sweden, Umeå, and University Hospital, Linköping	Sweden	Swedish National Board of Health and Welfare	88	24	outpatient

Table D-4. Study details (continued)

Citation	Study/Center Name	Country	Funding Source for Study	N	Number of Patients Lost to Followup	Setting (in-patient/out-patient)
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
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

Table D-4. Study details (continued)

Citation	Study/Center Name	Country	Funding Source for Study	N	Number of Patients Lost to Followup	Setting (in-patient/out-patient)
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
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

Table D-4. 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 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 D-4. 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 D-5. 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

Table D-5. 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
Cassisi 1989[109]	treatment	usual care	FALSE	FALSE	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?

Table D-5. 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
Elkayam 1996[125]	treatment	N/A	N/A	FALSE	prospective
Elkayam 1996[126]	measurement validity	N/A	N/A	CT findings	prospective?
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

Table D-5. 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
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
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

Table D-5. 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
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
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

Table D-5. 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
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
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

Table D-5. 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
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
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

Table D-5. 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
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
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

Table D-5. 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
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