

Nonspecific Lower-back Pain

Surgical versus Nonsurgical Treatment

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We review evidence-based treatments for patients seeking care for lower-back pain and patients who have been diagnosed with nonspecific lower-back pain. The review is based on selected systematic reviews and national and international guidelines for the treatment of lower-back pain. Additional randomized controlled trials (ie, possibly those not previously included in the latest systematic reviews) were reviewed and added based on recommended procedures for the evaluation of methodological quality (ie, strong, moderate, and weak). In acute nonspecific lower-back pain (0–4 weeks duration of pain) there is moderate to strong evidence that self-care with over-the-counter medication and maintaining activity as tolerated or treatment with a limited number of sessions of manipulative therapy is effective for pain relief. In subacute nonspecific lower-back pain (4–12 weeks duration of pain) there is weak to moderate evidence that a graded activity program including exercises and cognitive behavioral treatment in combination is more efficient than usual care with regard to return to work. There is strong evidence that these programs reduce work absenteeism. In cases of chronic nonspecific lower-back pain (> 12 weeks duration of pain) a variety of treatments are available with limited and similar efficacy on pain and disability reduction. There is moderate evidence that surgery in chronic nonspecific lower-back pain is as effective as cognitive behavioral treatment with regard to pain, function, mood and return to work. Surgical indications for chronic nonspecific lower-back pain remain ill defined.

Level of Evidence: Level V (expert opinion). See the Guidelines for Authors for a complete description of levels of evidence.

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Waddell⁸¹ suggested common lower back pain (LBP) was an epidemic in the 20th century.⁸¹ The World Health Organization (WHO) has included “low back pain” as a priority in the Bone and Joint Decade 2000–2010. More than 17 guidelines based on large evidence-based systematic literature reviews have been published on LBP in different countries.^{8,22,52,65,73} There are four major points within these guidelines (1) LBP is common, (2) a triage system is needed to separate specific from nonspecific lower-back pain (NSLBP); (3) psychosocial factors impact greatly on outcomes of treatment and disability; and (4) treatment should focus on the prevention of disability.

Lower-back pain is debilitating for the patient and is a major cost to society.²³ We discuss the evidence for and against different common nonsurgical treatment methods and surgical treatment methods for patients with NSLBP during the course from acute to chronic pain.

In their review article, Deyo and Weinstein³¹ pointed out “there are few large, randomized trials of therapy for NSLBP.” With this limitation in mind, we sought through selected literature to clarify whether surgery is warranted to treat patients having acute to chronic NSLBP and to focus on the prevention of disability and well being of the patient seeking care.

Specific and Nonspecific Lower-back Pain

The most used classification for pain in the lumbar spine by clinicians is “specific” or “nonspecific” LBP.^{25,41} A specific LBP diagnosis (about 1–2% of all patients with early back pain) is attributed to LBP, referring to any diagnosis from a systemic disease, infection, injury, trauma, cauda equina, or structural deformity.⁸ Nerve root pain usually represents about 5% of the pain in patients with a disc prolapse or spinal stenosis.^{7,8,52} The common feature here is a causal link between a structural pathology and the described experience of pain by the patient.

Nonspecific lower-back pain (in 85–90% of all individuals seeking care) or common LBP is a diagnosis of exclusion.^{8,22} The term “nonspecific” indicates that no precise structure has been identified causing the pain. Non-

specific lower-back pain includes common diagnoses, such as lumbago, myofascial syndromes, muscle spasms, mechanical LBP, back sprain, and back strain. Each of these vague conditions includes pain in the lumbar region that may radiate to one or both thighs, but not below the knee. The following International Classification of Diseases (ICD) diagnostic codes are suggested to best represent NSLBP: lumbago (724.2) and sprains of the lumbosacral region (846.0-3/8-9, 847.2-3).²⁵

Nonspecific lower-back pain is not a well-defined diagnosis and may lead to failed expectations to provide reassurance, assigning improper treatment, and uncertainty of prognosis and outcomes for clinician and patient. This dilemma is not unique to NSLBP; this critique is true for other nonspecific conditions such as upper extremity pain, knee pain, headache, and stomach ache.^{9,59,63,71} Diagnostic tools such as functional magnetic resonance imaging (MRI) possibly will shed more light on the identification of painful structures. However, the problem for now remains that individuals with or without nonspecific pain in the lumbar spine may have similar findings on the images and that the findings are correlated poorly to the symptoms and signs.^{10,37,47}

Natural History and Recurrence of Nonspecific Lower-back Pain

Acute NSLBP has a favorable prognosis. However, some authors argue that if recovery from NSLBP has not occurred during the first 3 months, then NSLBP will be a chronic disease for life.^{68,78} This is true for larger subgroups of individuals with NSLBP.^{45,80} Von Korff et al⁷⁹ found that 20% of people in the United States have had chronic LBP in the past year and that approximately 30% of the population in the United States had chronic pain somewhere in the body during their lifetime.

Authors focusing on the natural history of LBP report that 80% of patients who consult a health care provider for acute NSLBP can expect to resume their normal activities within 4 to 6 weeks.^{1,13,60} By 12 weeks, the rate of recovery rises to approximately 90%. Ten percent or less of patients with NSLBP have chronic pain (compared with approximately 35–40% of the patients with a specific diagnosis) and are unable to work.^{1,13,60} The recurrence rate of NSLBP has been described to vary substantially in population studies and specific occupational populations,^{20,78} but a recurrence rate or episode rate is difficult to estimate because the definition of an episode is not standardized in different studies.²⁹

Duration of Pain and Treatment Allocation

Treatment allocation for a patient seeking care for NSLBP changes with the duration of the pain. The following du-

ration allocations commonly are used: acute NSLBP, which refers to a duration of pain from 0 to 4 weeks;^{2,8,73} subacute NSLBP, which refers to a duration of pain between 4 to 12 weeks; intermittent NSLBP, which refers to when the patient is pain free or almost pain free for intermittent periods of time²; and chronic NSLBP, which refers to a duration of pain greater than 12 weeks.^{2,8,73}

We use a period of 3 months to designate chronic NSLBP. As a group, patients at 3 months have better prognosis and preventing disability is more likely.^{53,66,70} The most important message is to propose a continuum of care and to identify factors to prevent chronicity during the first 3 months after the patient seeks care for acute NSLBP.

Treatment Models

Two treatment models commonly are used in treating back pain: the medical model and the biopsychosocial model (Fig 1). The biopsychosocial model is preferred for

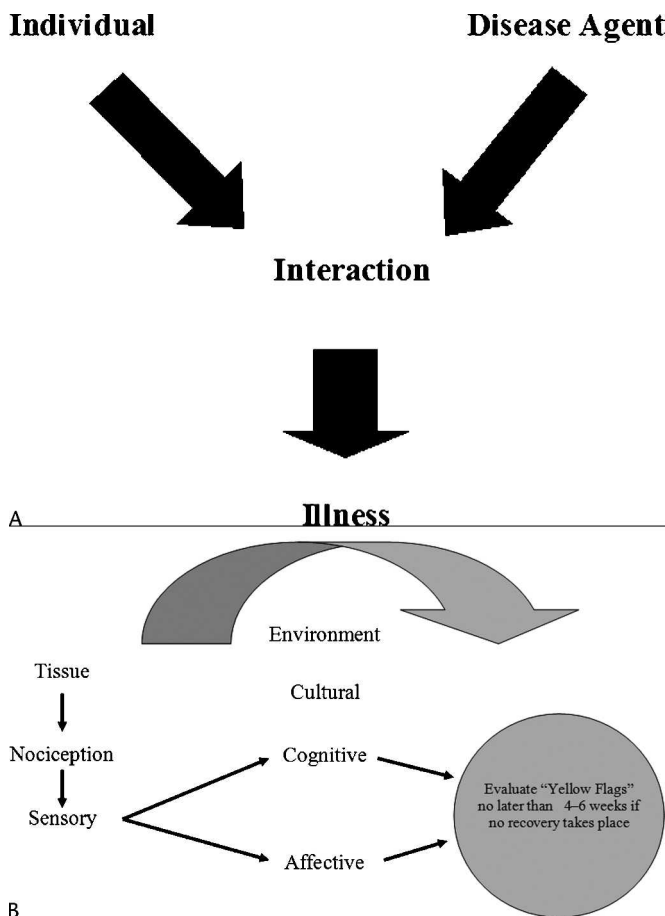


Fig 1A–B. (A) A schematic representation of the medical model and (B) the biopsychosocial model are shown.

NSLBP. In brief, modern medicine uses the classical scheme of illness, which implies that an interaction between the patient and a disease leads to an illness complex.⁸³ This model works well in dealing with patients with specific LBP in whom causality for the pain can be identified. The model suggests (1) recognizing patterns of symptoms and signs by history and examination, (2) identifying underlying injury or disease by investigation and diagnosis, (3) treating underlying injury or disease by specific therapy, and (4) expecting the patient to recover as explained by the cure.

In the case of NSLBP, the causality is seemingly more complex: LBP is rather a symptom and direct causality cannot be determined. The biopsychosocial model for NSLBP is used to identify factors associated with delayed recovery. This model calls for the identification of symptoms and signs outside the field of traditional medicine such as cultural beliefs, a high perception of disability, kinesiophobia, depression, stress from work or family, job dissatisfaction, anxiety, somatization, and lack of control.^{24,42,79,81}

Pain somehow is at the crossroads of the individual and the culturally formed group. This sets into play various physiologic and psychological mechanisms, but also it is integrated into the social and cultural contexts to which the individual belongs. The social context refers to factors such as socioeconomic conditions or sickness and invalidity legislation. The cultural context modulates variables such as the meaning and the expression of pain. In this sense, pain is as much a social and cultural construct as the result of biologic and psychological processes. The biopsychosocial model suggests in clinical care to (1) recognize the nonspecific nature of the back pain, (2) identify underlying psychosocial factors, (3) treat these factors with nontraditional interventions (eg, behavioral treatment, ergonomic intervention), and (4) empower the patient to take responsibility for managing a condition with possibly frequent recurrence.⁸¹

Patient Expectations

Patients approach the physician and clinician with various expectations and preconceptions. For examples, patients expect diagnostic explanations, pain relief, and instructions on how to deal with their pain and disability, referral for treatment, and perhaps help with sickness certification. Some patients expect imaging or special tests to identify the cause of back pain.³⁸ It takes time to identify expectations and explain relevant concepts. Misconceptions are best identified and addressed with the first encounter. On subsequent visits, these concepts are checked and reinforced.^{58,77} Evidence-based facts are useful to inform the patient that selective treatments or expectancy may have efficacy. Patient and clinician discuss the treatment pro-

posed and come to an agreement on the treatment regimen and on compliance.⁸² Patient education on the choice of treatment and the expected treatment outcomes seem to be key factors to success. Similarly, clinical negotiation is an essential tool when it comes to discussing pain as an active process involving patient expectations and coping strategies.^{64,79}

Evidence Level

We base the following on selected systematic reviews and existing national and international guidelines for the treatment of LBP. Additional randomized controlled trials (RCTs; ie, those possibly not previously included in the latest systematic reviews) were identified from a standing Medline electronic search and from our knowledge of the literature (for articles published up to September 2005). These additional studies were assessed using criteria related to the internal validity of the trial, according to the procedure described by van Tulder et al.⁷² This procedure includes reviewing quality for adequate method of randomization; concealment of treatment allocation; withdrawal/dropout rate described and acceptable co-interventions avoided; or equal blinding of patients, blinding of observer, blinding of care provider, intention-to-treat analysis, compliance, and similarity of baseline characteristics.⁷²

Presentation of the results from the various systematic reviews and RCTs was summarized according to the following classification: strong, moderate, and/or weak evidence for treatment results.^{8,73} Strong evidence generally is considered to be consistent findings (those for which $\geq 75\%$ studies showed a similar result) provided by a systematic review of multiple high-quality RCTs. Moderate evidence generally is considered to be consistent findings provided by (a systematic review of) multiple low-quality RCTs. Weak or conflicting evidence generally is considered to be one RCT (either high quality or low quality) or inconsistent findings from a systematic review of multiple RCTs. There is no evidence when there are no RCTs available for study.

Acute Nonspecific Lower-back Pain and Evidence

Acute NSLBP largely is a self-limiting condition. For the majority of patients, minimal or no medical intervention is recommended.^{2,27,57,73,74} The most important message is for patients to keep as active as tolerated and for physicians not to recommend bed rest. In two systematic reviews and a recent meta-analysis on exercises and NSLBP, exercise therapy seemed as effective as either no treatment or other nonoperative treatments in 11 trials involving 1192 adults.^{2,44,74} Specific exercises are not needed and may even have a negative effect.

A series of five to six manipulations in the acute stage of NSLBP, or a short course in pain treatment with five to six encounters with a therapist trained in the biopsychosocial approach reduces pain and disability in the short term.^{5,8,15,73} When comparing manipulation and a pain treatment program in patients with acute NSLBP, the outcomes at 3 months and 12 months almost were identical, with a decrease in the Roland-Morris disability score of approximately 8.8 out of 24 points.⁴³ Remaining active as tolerated, manipulations and pain treatment in acute NSLBP are superior to all passive modalities (mobilization, diathermy, massage, heat, and others).⁷³

Self-care for Acute NSLBP

Self-care implies that individuals seeking care for NSLBP can have control over their symptoms and be able to affect the necessary behaviors to reduce or alleviate their symptoms. The patient plays an active role in the recovery and decides which behaviors are tolerable or intolerable. The message that they remain active and do those activities that are tolerable cannot be emphasized enough.^{2,74} Other self-care techniques include (but are not limited to) applying heat or ice to control symptoms for short-term relief, stretching or/and walking, or using relaxation techniques.⁶¹ Using these techniques will provide the patient with short-term relief at any time convenient for the patient. Written information reinforcing the good prognosis, the biopsychosocial factors influencing recovery and self-care instructions are helpful at this stage. A media campaign was conducted based on the messages contained in the Back Book¹⁸; that is, reinforcement of the positive prognosis of back pain and of the importance of remaining active and avoiding bed rest. These recommendations aimed at preventing the occurrence of fear-avoidance beliefs and their possible consequences on the course of a back pain episode resulting in fear of movement because of pain and subsequent pain behaviors. This campaign improved the beliefs of the population about the consequences of back pain in future life and fear avoidance beliefs up to 3 years after cessation of the campaign.¹⁷ Furthermore, there was a decline in the number of claims, rate of days compensated, and medical payments for claims for back pain over the duration of the campaign.¹⁷

Pharmacologic Intervention for Acute NSLBP

The usefulness of nonsteroidal anti-inflammatory drugs (NSAIDs) has been systematically reviewed.⁷⁵ Most published trials reported on acute LBP, in comparison with a placebo. Whether NSAIDs provide better pain relief than a placebo is unclear in these studies. However, although patients taking NSAIDs used fewer simple analgesics, the

incidence of side effects was similar. Conflicting results have been found among studies comparing NSAIDs with paracetamol. In a systematic review, six studies comparing NSAIDs with narcotic analgesics or muscle relaxants were included. They concluded there is moderate evidence NSAIDs are not more effective than other drugs. No authors have compared the relative effectiveness of different NSAIDs.

Benzodiazepine and nonbenzodiazepine muscle relaxants, either isolated or combined with other drugs, have been investigated extensively in treating LBP. However, the number of high-quality studies comparing different muscle relaxants is rather limited⁷⁶ and therefore it is difficult to make general recommendations in this area.

The European Guidelines⁷³ recommend prescribing medication, if necessary, for pain relief. In such case, drugs preferably should be taken at regular intervals. Paracetamol is the first choice and NSAIDs are the second. If the previous strategy fails to decrease pain the clinician may consider a short course of muscle relaxants alone or associated with NSAIDs.

Interventions in Subacute Nonspecific Lower-back Pain to Prevent Chronicity and Disability

The treatment of patients seeking care for NSLBP with pain duration of 4 to 12 weeks has been called the window of opportunity; the treatment of patients with a duration of pain greater than 4 weeks is pooled together to highlight the continuum of therapeutic decisions. It is here that the clinician can be instrumental in preventing disability by recommending an alternative and more intensive regimen of evidence-based interventions. The clinical re-evaluation at 4 to 6 weeks includes again a careful orthopaedic and neurologic examination and possible imaging and other diagnostics if warranted to exclude any ongoing process in the spine.^{8,73} If the diagnosis remains NSLBP, screening for psychosocial factors and risk factors is warranted and necessary according to Kendall et al.^{50,51} Not recognizing psychosocial factors or issues early has shown in one study from a primary care cohort (n = 800) during a 5-year period to account for an increase of 10 consultations per year per patient.⁴⁸

Because no guidelines for the treatment of subacute NSLBP have been established clearly, treatment should proceed in a stepwise fashion, from the least to the most invasive treatment. There is weak to moderate evidence for the efficacy of treatment in randomized controlled trials for the following treatment regimen: exercise, behavioral therapy, and ergonomic intervention.⁷³ Medication regimen continues as needed or prescribed, provided that there is at least a partial effect and that no side effects occur.

The main message is to encourage patients to take an active course of treatment and to participate as a stakeholder in the treatment to prevent long-term disability and chronicity. Meaningful outcomes for the patient that need to be discussed and the methods of achieving these goals are: feeling better, resuming activities including work, avoiding recurrence, taking control of the condition, and retaining work and preferred activities.

Treatment of subacute NSLBP is demanding because compliance with regimens requires the patient's active participation. Compliance rates for different regimens have been reported to vary from 13% to 85% with type and frequency of treatment seeming to influence adherence.^{3,54}

In an active treatment approach the patient participates in the decision-making and recovery. The stepwise active approach includes an exercise regimen or a cognitive behavioral treatment and is worth trying, either as a unimodal intervention first or a combination thereof as a bimodal treatment if no recovery takes place. Continued passive long-term treatment for weeks at this duration of NSLBP is harmful. It pacifies the patient, increases the fear that the condition is serious, decreases cardiovascular condition, and reinforces the sick role.⁸¹

Exercise Programs for Subacute and Chronic Nonspecific Lower-back Pain

Many types of exercises programs for LBP exist, with proponents supporting one treatment over another depending on their bias. Two systematic reviews of exercises and randomized controlled trials analysis suggest exercise is effective, and that different types of exercises are equally effective.^{2,74}

The message is to start moving, with or without help from coaching. Authors of one meta-analysis that included five studies with different types of exercises and about 800 patients concluded that the evidence is insufficient to refute or support the effectiveness in regimens including exercise only without a behavioral component for patients with subacute NSLBP.⁴⁴

Cognitive Behavioral Therapy

Cognitive behavioral treatment interventions include creative visualization, imagery, progressive muscle relaxation techniques, problem solving techniques and others. The goal is to have the patient understand, accept, and gain control of the back-pain problem and its possibly deleterious consequences (eg, loss of self-esteem, fear of movement, depression, family problems, work loss, social withdrawal) by helping the patient develop adaptive coping behaviors and strategies (eg, confrontation with activity, acceptance of pain, positive appraisal of the situation, and problem solving).⁵⁶ There is moderate-to-strong evidence

that cognitive behavioral treatment should be used early if biopsychosocial signs or symptoms are present, and there is strong evidence that cognitive behavioral treatment should be used in patients with chronic NSLBP.⁶² The European Guidelines recommended cognitive-behavioral treatment for patients with chronic LBP based on "conclusive evidence that there are no differences in effectiveness between the various types of behavioral therapy and that behavioral treatment is more effective for pain, functional status and behavioral outcomes than placebo/no-treatment/waiting-list control."⁷³

Combination Intervention in Occupational Settings: NSLBP for More than Four Weeks' Disability

Researchers investigating patients in occupational settings have found that a graded behavioral-oriented exercise activity program provides moderate to excellent effectiveness for a reduction of days lost at work. The graded behavioral-oriented exercise activity program was compared with usual care.^{53,66,70} Authors of these studies had a highly structured intervention with an unambiguous primary goal of returning the patient to work. The programs use gradually progressive exercises that are adapted to the patient's need. The clinical team is trained, and all caregivers provide the same message to the patient to avoid ambiguity. Ample communication and discussion with the patient is an important part of the treatment.

An ergonomic intervention such as a workplace visit or a discussion with the occupational physician may or may not be added to these programs,^{53,55} with some evidence these programs reduce absenteeism from work. Lindström et al⁵³ showed an average return to work in the intervention group at 10 weeks (standard deviation [SD] 12.7) and at 15.1 weeks (SD 15.6) in the control group. Staal et al⁶⁶ reported an effect on work loss days with a Hazard Ratio [HR] 1.9 [confidence interval (CI) 95%, 1.2–3.2] at 50 days after randomization in favor of the graded behavioral-oriented exercise activity program. However, the results were not significant in early follow-up of less than 50 days for the two interventions (exercise program only and a graded operant conditioning program). Self-reported pain and function marginally were affected in all studies.^{53,66,70}

It is possible that the highly structured positive environment in an occupational setting provided a better venue for problem-solving, education of the condition, and monitoring of the patient's progress. The Cochrane review of multidisciplinary biopsychosocial rehabilitation concludes, "there is moderate evidence showing that multidisciplinary rehabilitation for subacute LBP is effective and that worksite visits increase the effectiveness." However, the findings must be interpreted with caution because there were some flaws in the methods of the few studies reviewed and the results need to be confirmed.⁴⁹ These

highly structured programs warrant more research in nonoccupational settings.¹⁹

Multimodal Programs for Chronic Lower-back Pain

Two reviews and one systematic Cochrane review on persistent or chronic LBP have shown the importance of multimodal active programs.^{11,21,40} The Cochrane review of multidisciplinary biopsychosocial rehabilitation for chronic NSLBP concluded the following: "There is strong evidence that intensive multidisciplinary biopsychosocial rehabilitation for chronic NSLBP with a functional restoration approach reduce pain when compared with [inpatient] or [outpatient] non-multidisciplinary treatments, and moderate evidence when these programs are compared [with] usual care. There is contradictory evidence regarding global vocational outcomes."⁴⁰ The authors gave caution about the lack of definition concerning content, duration, and intensity of the programs, but found that programs with durations of more than 100 hours of therapy that focus on functional restoration seem to be more effective than less-intensive programs or control groups of non-multidisciplinary character. The comparison included treatments such as exercise only, back school, education, usual care, and assessment by a specialist with or without a nurse or with or without advisement (oral and printed), waiting list, and others. Ten trials were selected for quality, including 1964 patients with chronic NSLBP. Of these ten trials, eight related to the duration of treatment (Fig 2). The review indicates significant and favorable results for pain ratings, functional status, employment status, and sick leave up to 60 months. These programs are costly; however, it is not known if the programs are more or less costly than surgical intervention. These programs have no documented complications and are favorable compared with spine surgery.

Manipulation

Manipulation has been evaluated extensively for chronic NSLBP and less evaluated in the subacute phase between 4 and 12 weeks. However, in a recent pragmatic randomized trial, 181 general practices participated in Great Britain and included 1334 patients with mainly subacute NSLBP. Patients were randomized to groups of usual best care with or without exercise or groups of manipulation with or without exercises.⁶⁹ Patients were followed up for 1 year. The Roland Morris Disability Questionnaire improved with a mean of 3.3 (SD 4.5) and 3.5 (SD 4.7) points at 3 and 12 months, respectively, out of a total score of 24 points (a score change of 20% is deemed clinically significant¹²). The difference between the groups was not significant. Manipulation for chronic NSLBP has been reviewed extensively by Assendelft et al,⁵ Bronfort et al,¹⁵

and Cherkin et al.²⁶ In a meta-analysis, the authors concluded there is no evidence that spinal manipulation is substantially more or less effective than other conventional therapies for chronic NSLBP in the short term and long term.²⁶ Comparisons were made with sham manipulation, traction, corset, bed rest, home care, topical gel, no treatment, diathermy, massage, general practitioner care, analgesics, physical therapy, exercises, back school, or some combination thereof. The European Guidelines recommend a short course of spinal manipulation and mobilization as a treatment option for chronic NSLBP.⁴⁶

Pharmacologic Intervention for Chronic Nonspecific Lower-back Pain

In the systematic review by van Tulder et al⁷⁴ only one high-quality study was available and reported better outcomes in the NSAIDs group compared with analgesics. Because authors of only four of the 51 studies included in that review reported exclusively or separately on patients with chronic pain, and these studies included different comparisons, van Tulder et al⁷⁴ wrote, "evidence could not be provided on the efficacy or effectiveness of NSAIDs in managing chronic LBP."

There is strong evidence from two high-quality trials that terazepam 50 mg 3 times/day is more effective than a placebo for short-term pain relief and overall improvement. However, this drug was available only in some European countries and Mexico when the review of the literature was published.⁷⁶

Among the nonbenzodiazepines, there is moderate evidence that flupirtine and tolperisone are more effective than a placebo for short-term improvement.⁷⁵

Breckenridge and Clark¹⁴ and Fillingim et al³⁴ independently demonstrated the use of opioids in patients with chronic LBP was not predicted by pain intensity. Therefore, the factors influencing healthcare providers to prescribe opioids probably deserve more research.

The efficacy of antidepressants in treating chronic LBP was reviewed systematically by Staiger et al.⁶⁷ Based on the seven studies included, the authors concluded that tricyclic and tetracyclic antidepressants can produce moderate symptom reduction. Inhibition of norepinephrine reuptake seems important for the analgesic effect. Benefits seem to be independent of a patient's depression. Selective serotonin reuptake inhibitors (SSRIs) were evaluated in three studies, and no analgesic effect was seen. The effect of these drugs on functional status is unclear.

Atlas and Nardin⁶ stated in their review that evidence supporting the use of oral corticoids is lacking. Therefore, because these drugs have potential significant side effects, these authors advised against their use in patients with chronic pain.

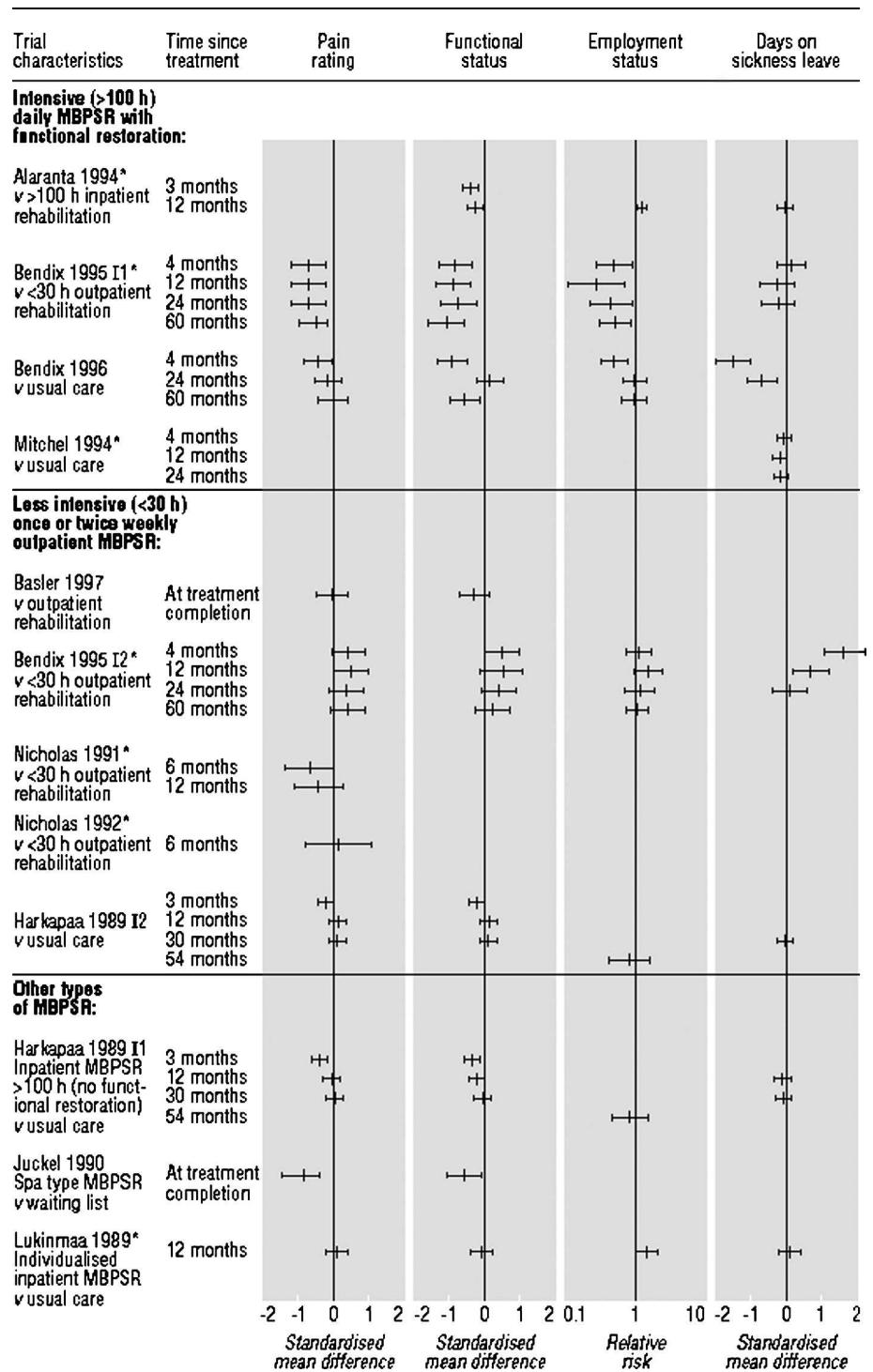


Fig 2. A diagram of efficacy is shown for multimodal programs including 100 versus 30 hours of intensive rehabilitation for patients with chronic LBP. Treatment effect sizes for eight randomized comparisons of multidisciplinary biopsychosocial rehabilitation and a control condition are shown. Bars represent standardized mean differences and 95% confidence intervals for comparison of intervention and control groups, except for employment status, where bars represent relative risks. Treatment effect sizes entirely to the left of the vertical line indicate significant differences in favor of the intervention. MBPSR = Multidisciplinary biopsychosocial rehabilitation; I1* = Intervention 1 in a trial testing more than one multidisciplinary intervention; I2* = Intervention 2 in a trial testing more than one multidisciplinary intervention; *High-quality trial. Reprinted with permission from Guzman J, Esmail R, Karjalainen K, et al: Multidisciplinary rehabilitation for chronic low back pain: Systematic review. *BMJ*. 2001;322: 1511–1516.

Most drugs have a better effect on pain than on function. As in others, in our clinical practice drugs are usually prescribed when the reported intensity of pain is interfering with the quality of life or with the reconditioning program.

Is There A Place for Surgery to Treat Chronic NSLPB?

Nonspecific lower-back pain would imply LBP without sciatica in patients with degenerative disc diseases.³⁰ The

diagnosis itself has shown to be controversial, but is usually made by provocative discography at the level of the disc, possibly causing the pain.²¹ An et al⁴ discuss disc degenerative progressive changes as part of normal aging. Studies today cannot confirm what starts and what influences progression if no traumas and/or diseases are present (red flags). There is also debate about the disc as a pain source; however, from a clinical perspective, the severe disc degeneration on several levels is shown to be a source of pain.⁴ Moderate to less visible disc degeneration changes are more debatable. The authors argue in favor of looking for other sources of pain and enhancers or modifiers of pain.

A systematic literature review in 1999 concluded with insufficient evidence for using lumbar spine fusion in lumbar spondylolysis and back pain.³⁶ Fritzell et al³⁵ compared fusion with usual nonoperative care in patients with one or two level disc degeneration and pain duration of at least 1 year. The surgical group had a greater improvement in pain relief, function, depressive symptoms, and return to work. The study was not blinded, and between-group differences decreased at 2-years' follow-up. The nonsurgical group included a variety of treatments according to the individual physician's preference and this heterogeneity may also have contributed to less favorable results in the nonsurgical group.

In one smaller randomized trial, 64 patients with NSLBP lasting longer than 1 year and evidence of disc degeneration at L4-L5 and/or L5-S1 at radiographic examination were randomized to be treated with lumbar fusion with posterior transpedicle screws and postoperative physical therapy, or cognitive intervention and exercises.¹⁶ The results showed at a 1-year followup visit that disability (Oswestry Disability Index) was reduced significantly in both groups. The mean difference between the groups was not significant (Fig 3). Improvements in back pain, use of analgesics, emotional distress, life satisfaction, and return to work were not different. There was a greater reduction in fear-avoidance beliefs and fingertip-floor distance after nonoperative treatment, and lower limb pain was reduced more after surgery. The early complication rate in the surgical group was 18%. This study needs to be confirmed by other and larger studies; however, it may provide evidence to support an alternative treatment when expected outcomes for surgery are uncertain.

Further evidence comes from a multicenter study in Great Britain in which 349 patients with chronic back pain lasting more than 1 year were randomized to surgery (spinal fusion) or an intensive rehabilitation program for 5 days/week for 3 weeks and were followed up on for 2 years.³³ The program was tailored to each patient with progressive exercises and cognitive behavioral treatment to overcome fears and unhelpful beliefs of back pain. Both

groups reported reductions in disability, the only primary outcome measure that was marginally different in favor of surgery was the Oswestry Disability score with a decrease of about four points on a scale of 100 (−4.1 points, CI 95%; range, −4.1 to −0.1 points; $p = 0.045$), which was not clinically significant.¹² No clear evidence emerged that primary spinal fusion was any more beneficial than intensive rehabilitation.

Randomized controlled trials on new technology such as artificial discs, electrothermal therapy, analgesic pumps, and implanted stimulators are lacking. Authors of one systematic review stated, "there is no evidence that disc replacement reliably, reproducibly, and over longer periods of time fulfills the three primary aims of clinical efficacy, continued motion, and few adjacent segment degenerative problems. Total disc replacement seems to be associated with a high rate of reoperations, and the potential problems that may occur with longer followup have not been addressed."²⁸

Arthroplasty, fusion, and laminectomy have been compared in randomized clinical trials with similar outcomes.³⁹ In these studies no nonsurgical comparison groups were included. There is a great need for studies comparing this new technology with nonsurgical interventions. In patients with chronic NSLBP current evidence points to improved triage, a stepwise active approach where patient and clinician discuss goals, treatment outcomes, and compliance for proposed the treatment before surgery is tried. This discussion can also include possible complications. Indeed no complications have been reported in therapies including exercise, cognitive behavioral treatment, or workplace interventions. Complication rate for spine surgery varies from 2% to 18% including instrument failure, prosthetic migration, infection, chronic pain, and neural injuries or/and pulmonary embolus. This information can be used when explaining and advising the patient about a stepwise active approach.

DISCUSSION

Acute NSLBP is a largely self-limiting condition. Self-care can and should be promoted, and the most important component is to maintain activity to tolerance throughout painful periods. The guidelines are unambiguous and the approach for treating acute NSLBP is patient education, over-the-counter medication, maintaining activity to tolerance, and/or a few sessions of manipulation and followup.^{8,22,73}

For patients demanding treatment, it is prudent to ask for the patient's expectations and goals, and to reinforce the positive recovery and prognosis of acute NSLBP. The natural history in the first 4 weeks of NSLBP appears unaltered by treatment to prevent long-term disability and persistent pain; however, treatment will provide short-term

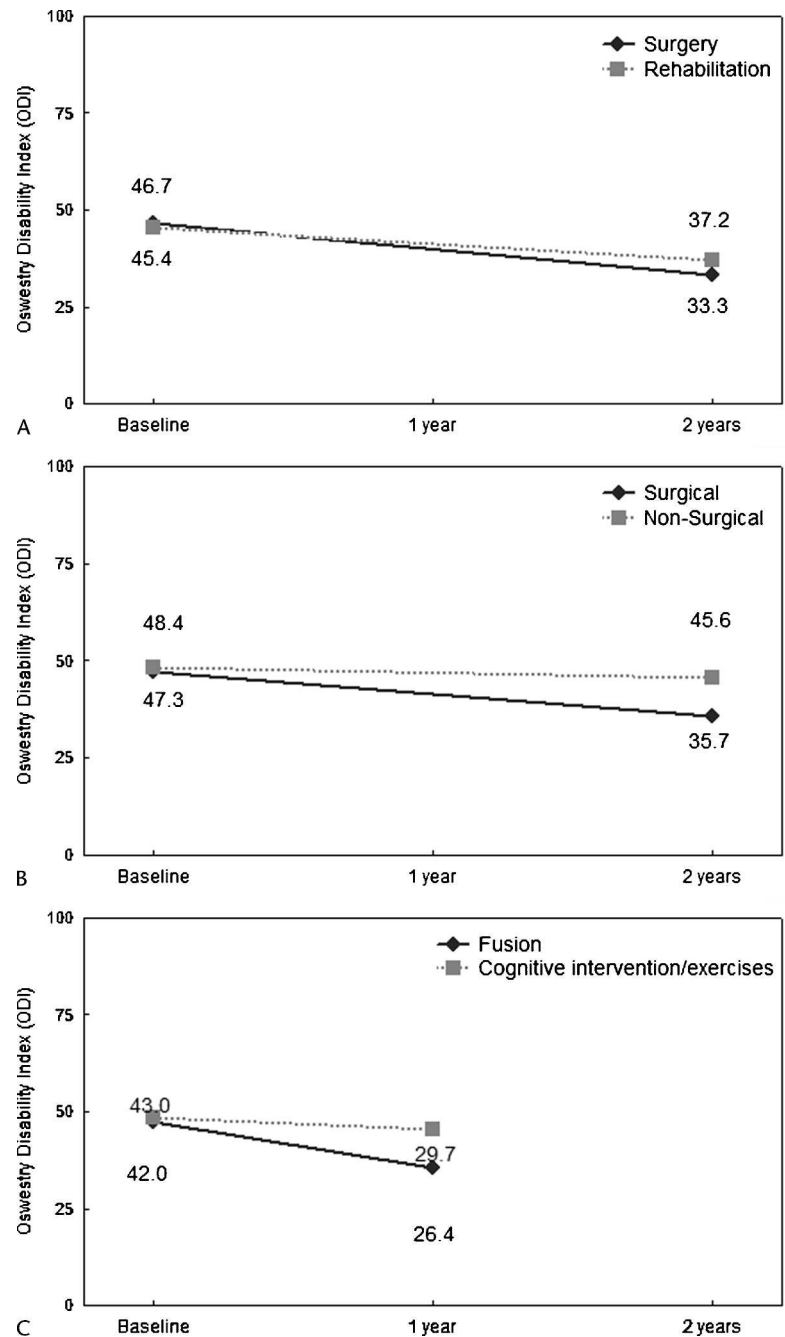


Fig 3A–C. Recalculated values on perceived disability measures collected through the Oswestry Disability Instrument at baseline and 1 to 2 years follow-up from three studies—(A) Fairbank et al,³³ (B) Fritzell et al,³⁵ and (C) Brox et al¹⁶—comparing surgical and nonsurgical treatment in patients with chronic NSLBP are shown.

pain relief and comfort. Is there a reason to choose one treatment alternative over another? In acute NSLBP keeping active as tolerated is the most successful choice, with or without help from a healthcare provider.

Subacute and chronic NSLBP are described together to stress the importance of a continuum of care and a step-wise approach where the evidence points to combination therapy of exercise, cognitive behavioral therapy, education and possible an workplace interventions. The pro-

posed treatments are started as unimodal and then combined. A structured approach seems to have the best results where the healthcare providers treat the patients as a team and provide a clear and common message to prevent long-term disability and chronicity.^{53,66} There still is a need for more research to identify patients at risk of developing chronic NSLBP. Programs providing such combined therapies and structured on a daily basis have a moderate to strong positive effect on NSLBP with duration of more than 6 months.

The surgical indications for chronic NSLBP lack specificity.²¹ Several areas need more research and we pointed to the areas we believe would most enhance care. Several acceptable randomized trials show that a combination treatment for subacute and chronic NSLBP are effective in reducing work absenteeism and have a minor effect on the pain.^{40,53,55,66} The literature is lacking in studies testing each component of these programs in a controlled and stepwise way.

Patient adherence to nonsurgical treatments remains a complex problem.³ Noncompliance is common and often precludes potential treatment benefits. For patients, adherence is seemingly not the issue: they do not perceive exercising, taking drugs or changing behaviors or attitudes entirely in terms of obeying the doctor's prescription. Instead, they weigh the costs and benefits of the prescription, as they perceive them within the context of their everyday life. This perspective implies that nonadherence may not be a deviance but a reasoned behavior, based on the patients' beliefs and previous experiences.³² More research is needed in the area of patients' expectations, beliefs and choice. It is possible that combination treatments tailored to the patient's needs will enhance adherence and thereby improve outcomes.

Surgical indications for treating chronic NSLBP are ill defined. We cannot expect enhanced results until we have a better understanding of the relationship between pain and a degenerated disc.⁴ At the current state of knowledge, surgery for chronic NSLBP is no better or worse than exercise or manipulation; it is, however, more costly for society and has a higher complication rate.

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