

Back Pain, Neck Pain

SBU's task is to critically review the scientific basis of methods used in health care and to evaluate their costs, risks, and benefits. This is a summary of the SBU report "Back Pain, Neck Pain". The original report contains 21 chapters, 2000 references, and covers 800 pages.

Back Pain Neck Pain

An Evidence Based Review

SBU Board of Directors & Scientific Advisory Committee

Executive Director

EGON JONSSON, SBU

Board of Directors

KJELL ASPLUND
Norrland University Hospital
(Chair)

EVA FERNVALL MARKSTEDT
Swedish Association of
Health Professionals

BERNHARD GREWIN
Swedish Medical Association

TORE LÖWSTEDT
Västerbotten County Council

NINA REHNQVIST-AHLBERG
National Board of Health
and Welfare (Vice-Chair)

MADELEINE ROHLIN
Faculty of Dentistry, Malmö

OLLE STENDAHL
Medical Research Council

BIRGITTA STRANDVIK
Swedish Society of Medicine

ULLA ÅHS
Swedish Association of Local
Authorities

MARIE ÅSBERG
Karolinska Institute

Scientific Advisory Committee

PETER ASPELIN
Huddinge University Hospital
(Chair)

LENA BARRBRINK
Ministry of Health and Social
Affairs

BJÖRN BEERMANN
Medical Products Agency

BIRGITTA BERNSPÅNG
Norrland University Hospital

CECILIA BJÖRKELUND
Vasa Hospital, Göteborg

KURT BOMAN
Skellefteå Hospital

ANN-KATHRINE GRANÉRUS
Linköping University Hospital

KERSTIN HAGENFELDT
Karolinska University
Hospital

ANNA-KARIN HOLM
School of Dentistry, Umeå

BENGT JÖNSSON
Stockholm School of
Economics

DAG LUNDBERG
Lund University Hospital

MÅNS ROSÉN
National Board of Health and
Welfare

LIL TRÄSKMAN-BENDZ
Lund University Hospital

GIGGI UDÉN
Lunds University

Back Pain, Neck Pain

An Evidence Based Review

Summary and Conclusions

– approved by the SBU Board of Directors and Scientific Advisory Committee
The original report contains 21 chapters, 2000 references, and covers 800 pages.

Project Group

Alf Nachemson
(Chair)
Egon Jonsson
(Project Coordinator)
Carl-Axel Carlsson
Lars Englund
Mariëlle Goossens
Karin Harms-Ringdahl
Steven J Linton
Lars-Åke Marké
Anders Norlund
Margareta Söderström

Maurits van Tulder
Eva Vingård
Gordon Waddell
Christina Engström
(Project Assistant)
Margareta Nordwall
(Project Assistant)
Ingalill Persson
(Project Assistant)
Jessica Wallmark
(Project Assistant)

Reviewers

Paul Blomqvist
Peter Croft
Dieter Grob

Allen Hutchinson
Francis J Keefe
Töres Theorell

*Report: Back Pain, Neck Pain • Type: Systematic Review • ISBN: 91-87890-60-7
Report Number: 145 • Published: 2000 • Language: Swedish • Text: Egon Jonsson
English Translation: Ron Gustafson*



Treat the Patient

– not only the back

- » *Stay active – back pain is common and usually not harmful*
- » *Important however to identify the rare cases where back pain has a specific cause*
- » *The consequences of back pain may be more problematic than the pain itself*
- » *Preventive measures are known but not practiced*
- » *The societal costs of back pain are three times higher than the total cost of all types of cancer*
- » *Basic and applied research urgently needed. Only 0.2 percent of all RCTs address back pain*



SBU Summary and Conclusions

Pain is a signal that something is wrong. Regardless of its location, pain should be investigated to confirm or eliminate its association with a specific cause or serious disorder.

Although pain in the low back or neck affects most people at some time during their lives, it is seldom a sign of serious illness. In some people, the effects are more severe and more frequent, but most experience mild effects and only occasionally. Few experience constant, persistent pain.

Research seldom explains why or how pain in the low back or neck originates, or how long it will last, ie, whether it is acute and temporary or will remain a chronic problem. It can result from different, but perhaps associated, factors. The relationship of these factors often remains unknown. Although it is not always possible to cure back pain, treatment methods are available which can effectively relieve pain in most people.

Numerous studies have analyzed whether factors related to the individual, eg, gender, age, body length, weight, anatomic changes in the spine, and smoking correlate in any way with back pain. The data currently available do not reveal any specific, individual risk factors for back pain. Most studies find no differences in the risk for back pain, neither between men and women nor among individuals of different height, weight, etc. The only exception would be sciatica resulting from herniated discs, a disorder that appears more frequently in people aged 40 to 45 years.

Heavy physical labor and poor working environments are often cited as reasons for back pain. Many studies also report a clear correlation between reported low back problems and heavy

lifting or working positions in which the back is bent or twisted repeatedly and over a longer period of time. This also includes “shaky” vehicles such as forklifts, trucks, and tractors. As regards neck problems, studies have found a clear association between repetitive, monotonous work and fixed working positions. Neck and low back problems are also associated with poor psychosocial conditions in private life and the workplace, including poor work satisfaction.

Pain in the neck or low back can influence functional capacity and cause worry, anxiety, and depression. It has been known for some time that this, in turn, can amplify the perception of pain, but only recently have psychological factors been viewed as a link in the causal chain underlying the occurrence and persistence of neck and low back problems. There is well-documented scientific evidence that numerous psychological factors can influence the development and persistence of acute and chronic pain in the neck and low back. These problems occur since mental state, feelings, and behavior are partly dependent on factors such as work demands, time pressure, monotonous work, a low level of influence over the situation, poor social support, experienced pain, stress, worry, and anxiety.

Despite the insight on the important roles of these factors, research has contributed little by way of studies to assess preventive interventions against back pain. The studies which have been conducted in the field have focused primarily on rather narrowly defined preventive measures such as ergonomic methods, physical exercise, education on back anatomy, various supportive devices for the lumbar spine, and interventions to influence smoking, overweight, and certain psychosocial factors. The results of these studies are discouraging in the sense that most of the preventive measures studied are shown to be ineffective. The only exception is moderate, but regular physical training or exercise, where the results of several studies show good effects.

There are many different methods to treat back and neck pain. Naturally, for both the caregiver and the person with pain it is

important to know which methods can help and which methods have been shown by scientific studies to have no effect. Far from all methods have been studied scientifically in terms of patient outcomes. This review presents what we know and what we do not know about the effects of different treatment methods, based on comparative studies found in the international scientific literature.

Project

During the late 1980s, the Swedish Council on Technology Assessment in Health Care (SBU) initiated a project on the diagnosis and treatment of back pain. The project report, published in 1991, was well received.

Since then, the body of scientific literature on back pain has expanded greatly. For example, when the previous report was published, the project group had identified around 6000 studies, whereof approximately 100 were randomized controlled trials. Today, approximately 25 000 studies on back and neck pain have been identified, whereof approximately 1000 are randomized and/or controlled studies. Methods for searching and classifying scientific literature and methods for assessing the weight of the evidence presented have also advanced and have improved substantially during the past decade.

Approximately 4 years ago, SBU appointed an international project group of 13 people who were charged with complementing the previous report with results from scientific studies published during the 1990s. Approximately 80% of the studies referenced in this report have been published since the previous report was completed. The current SBU report consists of two volumes.

The first volume addresses how the work situation and social, psychological, and individual factors can influence back pain. It also discusses what is known about the origins of pain, the potential for preventing back pain, and how often it appears in different populations and age groups.

The second volume presents scientific facts on the results of conservative, surgical, and psychological treatment methods and the cost-effectiveness of various treatment methods. Volume two also presents an estimate of the total socioeconomic costs for neck and low back pain and a comparison of different social insurance systems.

The Scientific Literature

Many of the studies available present only descriptions, perspectives, and opinions about the causes of the problem and discuss what can be done by way of cure, relief, and rehabilitation. Others present data from comparative studies on the outcomes of different treatment methods.

The group working with this review selected around 2000 studies which they found to present relatively strong scientific evidence on different issues concerning back pain. Each chapter of the report describes how the literature was selected for that chapter.

In most of chapters on treatment methods, the studies selected were limited to randomized controlled trials – ie, studies where patients were randomly allocated to different types of treatment to analyze whether the treatment had effects, and if so, which treatment yielded the best results. This methodology is the most reliable for assessing the outcome of treatment, even if it is not completely objective and may somewhat limit the conclusions.

All studies that use this methodology are, however, not equally strong scientifically. Therefore, each study was graded according to the strength of the scientific evidence. This was done as objectively



as possible with the help of different protocols for grading the quality of the scientific assessments. However, in all chapters it was not possible to follow exactly the same procedure to grade the evidence of studies. As a rule, however, the studies were classified into groups that reflect: A) *strong* scientific evidence, B) *moderate* evidence, C) *limited* evidence, and D) *no* scientific evidence.

Studies classified into group A) offer strong scientific evidence that a particular treatment has good effects or strong scientific evidence that a particular treatment is shown to be ineffective by randomized controlled trials and has no positive effects on a patient's back problems. The same applies to studies in groups B) and C), ie, that moderate or limited evidence is available to show the effectiveness or ineffectiveness of a particular treatment. Finally, placement in group D) means that no studies are available that meet the standards for good scientific quality.

A summary of the results from the literature search is presented below.

Diagnosing Pain in the Neck and Low Back

Thorough, systematic anamnesis and physical examination are a good foundation for diagnosing back pain according to many studies reflecting moderate evidence (B). Furthermore, many studies show that the caregiver's involvement and ability to listen to the patient's concerns – not only about pain and its localization but also about the consequences of pain and how it is dealt with – are essential to good diagnosis. Along with the anamnesis and physical examination, listening and talking allow the patient and caregiver to reach agreement on the best treatment. In most cases, this is a sufficient basis for developing a treatment strategy. It is also sufficient for identifying the few cases that must be referred for further investigation when a specific cause or serious disease may be responsible for the pain.

If pain persists for 3 to 4 weeks, further investigation should be carried out using one of the validated questionnaires which are

available, and which can identify other relevant problems, eg, in the work environment or the psychosocial situation in general (B).

Basic x-ray examination seldom provides guidance in diagnoses, except in cases where specific trauma or serious disease is present or suspected. As a rule, computed tomography (CT) and magnetic resonance imaging (MRI) studies do not identify where pain is located, again, except in patients where specific disease is suspected. A herniated disc pressing on a nerve root can cause severe sciatica. This condition can be visualized and confirmed by computed tomography or magnetic resonance imaging.

The advantage of CT examination is that the procedure is noninvasive, and MRI examination does not involve a radiation risk. However, false positive findings are a risk associated with these types of studies. This risk is substantial, both regarding herniated discs and changes in discs resulting from aging or narrowing of the spinal and root canals, which appear in approximately 40% to 50% of symptom-free individuals.

Only limited evidence is available for many other diagnostic methods and their benefits (C). This applies to measurement of range of motion, muscle strength and condition, facet joint or nerve root blockades, spectrometry, discography, electromyography or neurophysiology studies, and radiographic measurement of segmental movements and various spinal diameters.

Moderate evidence (B) suggests that thermography and ultrasound studies do not contribute information toward establishing a diagnosis.

Conservative Treatment of Acute and Chronic Low Back Pain

Conservative treatment refers basically to all nonsurgical treatment methods, excluding psychological treatment (discussed separately below). Conservative treatment methods include drugs, acupuncture, injections of various types, back exercises, back school, manual treatment, manipulation, physical methods, traction, corsets,

TENS (transcutaneous electrical nerve stimulation), behavioral therapy, multidisciplinary treatment, biofeedback, rest, and activation. The appendix to this summary presents an overview of the effects of various treatment methods. Here, the only conclusions presented on conservative treatment methods are those supported by strong evidence (A). However, the treatment methods graded as B-level evidence are also supported by relatively good scientific documentation (Appendix 1).

For *acute* low back pain, there is strong evidence (A) that:

- continuing with normal activities results in faster recovery and fewer chronic functional disorders,
- anti-inflammatory and muscle relaxant drugs offer effective pain relief for uncomplicated, acute, low back pain (however, these drugs have some side effects),
- bed-rest is *not* effective treatment for acute low back pain, and
- exercises involving bending, traction, aerobics, and stretching do *not* effectively cure acute low back pain.

For *chronic* low back pain, there is strong evidence (A) that:

- manual treatment/manipulation, back training, and multidisciplinary treatment are effective in relieving pain.
- intensive treatment at a health resort reduces pain in the short term for elderly patients (over 60 years of age) with chronic low back problems.

Conservative Treatment of Acute and Chronic Neck Pain

Conventional treatment methods that are normally used to treat neck pain are largely similar to those used to treat low back problems. The treatment methods reviewed in this report include drugs, physical training, manual treatment, massage, body exercises, muscle training, heat packs, ergonomic counseling, traction,

acupuncture, TENS, electromagnetic treatment, magnet therapy, patient education, behavioral therapy, steroid injections, and treatment involving neck collars, infrared light, ultrasound, lasers, cooling spray, and stretching.

Only a few studies in this field are of high scientific quality. In summary, only moderate or limited evidence is available to show that any of the treatment methods are effective in treating acute or chronic neck pain. However, there is strong evidence to show that acupuncture is *not* an effective method in treating *chronic* neck pain (A).

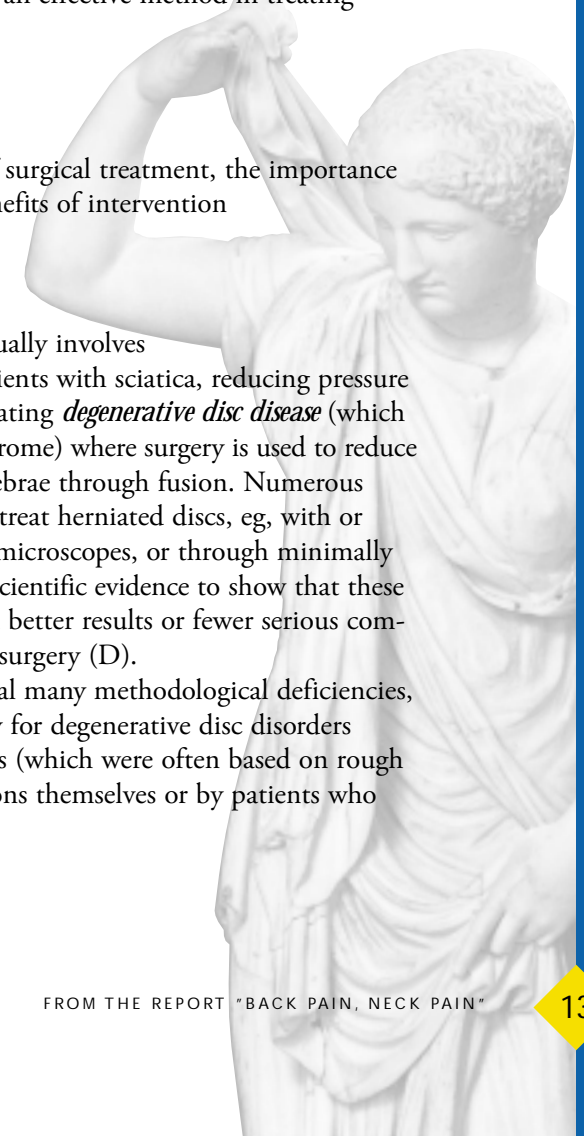
Surgical Treatment

When assessing the results of surgical treatment, the importance of weighing the risks and benefits of intervention increases.

Low Back Pain

Surgery for low back pain usually involves treating *herniated discs* in patients with sciatica, reducing pressure on painful nerve roots, or treating *degenerative disc disease* (which is a common age-related syndrome) where surgery is used to reduce pressure and/or stabilize vertebrae through fusion. Numerous surgical methods are used to treat herniated discs, eg, with or without the help of lasers or microscopes, or through minimally invasive surgery. There is no scientific evidence to show that these surgical methods would yield better results or fewer serious complications than conventional surgery (D).

The reviewed studies reveal many methodological deficiencies, mainly the studies on surgery for degenerative disc disorders aimed at measuring outcomes (which were often based on rough estimates by either the surgeons themselves or by patients who underwent surgery).



There is limited evidence on the outcome of surgery for *herniated* discs, but there is strong, indirect evidence on its effectiveness. The randomized studies that were reviewed showed herniated disc surgery to be more effective than chemonucleolysis (A), which, in turn, was shown to be more effective than placebo (A). Chemonucleolysis is an alternative to surgery and involves using the chymopapain enzyme to chemically dissolve the soft nucleus of the disc. The results of surgery are inferior when following failed chemonucleolysis.

Several surgical fusion methods are available to treat *degenerative disc disorders* or spinal stenosis, but there is no consensus on the definition and importance of spinal “instability”. No randomized controlled trials compare the effects of fusion with conventional treatment, placebo, or with the natural course of degenerative disc disease. There is no scientific evidence on the results from this type of surgery (D).

Neck Pain

The studies reviewed address the surgical treatment of chronic pain resulting from whiplash injuries, herniated discs, or spondylosis.

Only one randomized controlled trial was found on surgery for spondylosis, with or without herniated disc involvement. This study reported no advantages from surgery (B). Regarding whiplash injuries, there is no evidence that surgery is superior to conservative treatment.

Psychological Treatment Methods

Psychological treatment methods are used to complement other treatment and are often included as part of the increasingly common multidimensional pain treatment programs. Cognitive behavioral therapy focuses on managing the problems, feelings, thoughts, and behaviors that pain and functional disabilities may cause.

Many randomized controlled studies have addressed cognitive behavioral therapy. Although it is difficult to assess the specific

impact of cognitive behavioral therapy in multidimensional programs, studies show that programs which include this type of treatment achieve better results than other types of treatment in patients with *chronic* back problems (A). This particularly applies to treatment effects on anxiety, physical function, and medication use.

Influence of Social Factors

Social factors which have been reviewed include: the role of culture and family; the influence of unemployment on the consequences of back pain, its intensity, and duration; the role of access to social welfare payments and early pensions; and the importance of relations with work colleagues and the degree of work satisfaction in this context.

Neck and back pain occur in all societies, but cultural groups differ in how they perceive symptoms and react to them. No scientific evidence shows that genetic factors play a role in the occurrence of back pain, except possibly in disc aging.

Many studies show that poor social conditions are closely associated with poor general health status, including back pain. Regarding back problems as a risk factor for unemployment and early retirement, several studies clearly show conflicting results without a clear cause-and-effect relationship. Rather, it appears that age, psychological factors, and access to insurance are important explanatory variables in this context.

Several studies show that neck and back pain are not always isolated clinical problems, but are often associated with other pain, other diseases, stress-related symptoms, and work-related or other social problems. Scientific evidence shows, eg, that negative psychosocial aspects in working life, such as poor work satisfaction and poor relationships with others are associated with higher reporting of neck and back problems. There are no confirmed biological mechanisms that can explain how psychosocial factors would cause back pain, nor any evidence of a direct causal relationship.

In summary, there is extensive, but scientifically weak, evidence that social factors can influence the tendency to recognize back pain and that they can influence attitudes toward pain, functional disabilities, absenteeism, and early retirement. Some of these factors can be rather powerful and, at least in some situations, may have a greater impact on the back or neck than physical problems.

Economic Aspects

The total socioeconomic costs associated with back pain in Sweden in 1995 were 29.4 billion Swedish kronor (SEK), equivalent to about 377 million USD per million population. Most of these costs (98%), 27 billion SEK, were costs for sick leave and early retirement attributed to back pain. The remaining sum of 2.4 billion SEK represents the direct costs to health services, including physician visits, diagnostic studies, drugs, surgery, hospitalization, etc.

The direct cost to health care increased by 35% from 1987 to 1995. The overwhelming share of the increases in these direct costs can be attributed to a doubling of the costs for physiotherapy from 1987 to 1995. In fixed prices, these costs increased from 435 million SEK in 1987 to 950 million SEK in 1995.

Studies on the cost-effectiveness of various treatment methods were reviewed in developing this report. These studies addressed, eg, preventive programs involving physiotherapy, education, back school, workplace adaptation, early activation, manipulation, exercises, and various types of surgery. The review shows it is not possible to draw reliable conclusions on the cost-effectiveness of any treatment method.

Role of Primary Care

Many earlier reviews from different countries have led to evidence based guidelines for care of patients with back pain. These have focused on primary care.

The scientific studies currently available show that the interventions provided within primary care are the only ones needed by most patients with back problems. These studies also show that a primary care physician's most important task is not to intervene unnecessarily. Subjecting a patient to ineffective examinations and treatments carries the risk, eg, that the patient's back problem can develop into a chronic, life-long disorder.

In primary care, the consultation itself offers a major opportunity to influence both the acute and the more long-term course of back problems. An essential aspect of the consultation is the involvement of the caregiver and the ability to work with and listen to the patient's perceptions on back pain, mainly how it impacts on daily life. The opportunity for the physician and the patient to arrive at a common understanding about the nature and course of back pain is of major importance for the prognosis and is highly dependent on a good patient-doctor relationship.

Conclusions

- ❑ Pain in the low back and neck is common. *Low back pain affects up to 80% of all people at some time during life*, and neck pain affects up to 50% of the population. In the overwhelming majority of people, back pain does not signal a serious disease or suggest that one should avoid normal daily activities. On the contrary, scientific studies show that *healing is promoted by staying active, returning to work, and exercising at an appropriate and increasing intensity*.
- ❑ *A thorough anamnesis and physical examination is important* for relieving anxiety about the consequences of pain and sufficient for identifying the patients who should be referred to another specialist for examination and treatment (eg, due to severe infection, specific rheumatic disease, suspected cancer, or other serious conditions).
- ❑ *For most people with back pain, the interventions which can be offered in primary care are the only ones needed.* The physician's attitude and ability to listen to and express empathy with the patient is important for achieving a common understanding with the patient concerning which treatment strategies would be effective. This also has importance for the future course of back pain and compliance with treatment advice.
- ❑ Back pain and its consequences are not isolated physical problems but are associated with other conditions such as social, psychological, and workplace-related factors. These factors, eg, stress, worry, and anxiety – along with the patient's own perceptions of and ability to manage the problem – can have a decisive impact on the transition from acute to more chronic pain. *The obvious role of psychosocial factors in this respect suggests that such factors should be considered an integral part of back pain* in relation to

preventive efforts, in the initial phase of treatment, and later during rehabilitation.

- ❑ Knowledge on how to *prevent* back pain is not directly deficient, but has been applied and assessed to a surprisingly small degree. *The knowledge currently available should be applied and thoroughly assessed.*
- ❑ The relatively large resources that have been invested locally, regionally, and nationally to prevent and rehabilitate back problems, including interventions to improve the work environment, should be subject to systematic assessment based on current knowledge about the effects of various interventions. *The sporadic research on prevention and rehabilitation of back problems should also be assessed in terms of its relevance and scientific quality.*
- ❑ Many treatment methods are currently used, but there is little scientific evidence on their benefits. Some treatment methods are used despite scientific evidence showing that they do not benefit the patient. *The appropriateness of subsidizing ineffective treatments with public funds should be investigated.*
- ❑ The primary focus concerning back pain should be on the pain itself and on the human suffering it involves. Furthermore, back pain has an extensive economic impact on the individual and society. The direct healthcare costs and the costs resulting from sick leave and early retirement due to back pain reach an annual sum that is *over three times higher than the corresponding costs for all cancer diseases. Against this background, it is remarkable that research on back pain, particularly research related to prevention, pain relief, and rehabilitation is relatively limited in scope.* Agencies which have responsibility for and interest in effectively managing back problems should take initiatives to stimulate and focus research in this field, and disseminate information that is currently available, eg, in this report.

Evidence for Treatment of Low Back Pain
[From SBU's Summary and Conclusions]

	Acute	Chronic
Rest/bed-rest	Strong evidence against	
Traction	Limited evidence	Strong evidence against
Antidepressants	No evidence	Moderate evidence against
Biofeedback	No evidence	Moderate evidence against
Epidural steroid injections		
– No nerve root pain	No evidence	Moderate evidence against
Cold	No evidence	No evidence
Heat	No evidence	No evidence
Injections in triggerpoints	No evidence	No evidence
Injections in ligaments	No evidence	No evidence
Injections in facet joints	No evidence	No evidence
Massage	No evidence	No evidence
Shortwave diathermy	No evidence	No evidence
Ultrasound	No evidence	No evidence
Acupuncture	No evidence	Limited evidence
Corsets	No evidence	Limited evidence
Back exercises	No evidence	Strong evidence for
Health resorts	No evidence	Strong evidence for
Multidisciplinary treatment	No evidence	Strong evidence for
All forms of surgery		
– Except for herniated disc	No evidence	No evidence
Back school	Limited evidence	Limited evidence
TENS	Limited evidence	Limited evidence
Epidural steroid injections		
–nerve root pain	Limited evidence	Limited evidence
Colchicine	Limited evidence	
Cortisone	Limited evidence	
Behavioral therapy	Limited evidence	Strong evidence for
Manual therapy	Moderate evidence for	Strong evidence for
Paracetamol	Moderate evidence for	
NSAIDs	Strong evidence for	
Continued activity	Strong evidence for	
Surgery for herniated disc		Strong evidence for

Evidence for Treatment of Neck Pain
[From SBU's Summary and Conclusions]

	Acute	Chronic
Surgery;		
herniated disc	Moderate evidence against	No evidence
fusion, other	No evidence	No evidence
Acupuncture	No evidence	Strong evidence against
Traction	Limited evidence against	Moderate evidence against
Neck support	Limited evidence against	Limited evidence against
Steroid injections	No evidence	Limited evidence
Infrared light	Limited evidence	No evidence
Electromagnetic therapy	Limited evidence	No evidence
TENS	Limited evidence	No evidence
Cold spray and stretching	Limited evidence	No evidence
Patient education	Limited evidence	No evidence
Manual therapy – alone	Limited evidence	No evidence
Drugs, muscle relaxants	Limited evidence	Limited evidence
Laser therapy	Limited evidence	Limited evidence
Manual therapy – program	Moderate evidence for	
Physical exercise	Moderate evidence for	Moderate evidence

Appendix 1

Treatment Methods – An Overview of the Results

Level A *Strong evidence* – findings concur in several, randomized controlled trials of high quality.

Level B *Moderate evidence* – findings concur in one randomized controlled trial of high quality and one or more randomized controlled trials of low quality, or findings concur in several studies of low quality.

Level C *Limited evidence* – based on one randomized controlled trial (of high quality or low quality) or contradictory findings in several studies.

Level D *No evidence* – no randomized controlled trials or other types of studies of satisfactory scientific quality.

Conservative Treatment Methods for Low Back Pain

Medication

Strong scientific evidence shows that muscle relaxants, (eg, benzodiazepines) and anti-inflammatory drugs (NSAIDs) relieve pain in patients with *acute* and subacute low back problems, ie, problems which have existed up to 3 weeks or up to 12 weeks (A). However, anti-inflammatory drugs can have serious side effects, particularly in elderly people, and muscle relaxants can cause tiredness and dependency, even after short-term use. Furthermore, there is moderate scientific evidence that paracetamol is effective in relieving *acute* low back pain (B).

Limited scientific evidence suggests that these drugs are effective in treating *chronic* low back pain (C). For example, only one study was found that compared the effects of muscle relaxants with the effects of placebo (ie, no active treatment), but no such studies address analgesics and NSAIDs in people with *chronic* low back problems.

There are no studies on the effects of anti-depressants in treating acute low back problems (D). However, moderate evidence suggests that these drugs do not have any effect on pain and mobility in patients with chronic low back disorders (B).

Studies show that only limited evidence supports the treatment effects of colchicine (medication for gout) and cortisone in tablet form (system steroids) on *acute* low back pain (C). Serious side effects have been reported for colchicine, but for system steroids such side effects accompany only long-term use.

Injections

Several different types of injections are used at times to treat both acute and chronic back problems. The injections reviewed were: epidural steroid injections, ie, injections in the spinal cord canal, injections in trigger points and ligaments, and injections in facet joints (small joints in the vertebral column).

Limited evidence suggests that epidural steroid injections are more effective than placebo for *acute* and *chronic* low back problems involving nerve root pain (C). There are no studies addressing the effects of these injections on *acute* low back problems without nerve root pain (D). However, moderate evidence suggests that these injections do *not* have any effects on *chronic* low back pain without root symptoms (B).

There is no evidence on the effects of injections in trigger points, ligaments, or facet joints (D).

Back School

There is limited evidence on the effects of back school on chronic and acute low back problems (C).

Transcutaneous Electrical Nerve Stimulation

There is limited evidence on the effects of TENS on acute and chronic low back problems (C).

Traction

Limited evidence suggests that traction is effective in treating *acute* low back problems (C). However, strong evidence shows that it is *not* effective in treating *chronic* low back problems (A).

Acupuncture

There is no evidence on the effects of acupuncture in treating *acute* low back pain (D). However, limited evidence suggests that acupuncture is effective in treating *chronic* low back pain (C).

Physical Treatment Methods

There is no evidence on the effects of cold, heat, short-wave diathermy, massage, or ultrasound in treating *acute* low back problems (D).

Low Back Corsets and Other Supportive Devices

There is no evidence on the effects of different types of supportive devices in treating *acute* low back problems (D), and limited evidence regarding their effects on *chronic* low back problems (C).

Back Exercises/Back Training

Strong evidence shows that back training is effective treatment for *chronic* low back pain (A). There is also strong evidence that most types of specific back exercises, eg, bending, traction, aerobic training, strength training, and stretching are *not* more effective than other interventions in treating *acute* low back pain (A).

Manual Therapy (Manipulation and Mobilization)

Strong evidence shows that manipulation provides short-term pain relief for *chronic* low back problems (A) and moderate evidence that it has corresponding effects on *acute* low back pain (B). There is also moderate evidence that manipulation provides

better short-term relief from *chronic* low back pain compared to routine care from a general practitioner, bed rest, analgesics, or massage (B). Limited evidence suggests that manipulation is more effective than physiotherapy or drugs in relieving *acute* low back pain (C). The long-term effects of manipulation are supported only by limited evidence (C). There is a small, but serious, risk for neurological complications from manipulation therapy in patients with progressive neurological deficit.

Behavioral Therapy

There is limited evidence that behavioral therapy is effective in treating *acute* low back pain (C), but moderate evidence concerning its effects on *chronic* low back pain (B).

Multidisciplinary Treatment

Strong evidence shows that multidisciplinary treatment is effective in pain relief and functional improvement for patients with long-term and severe *chronic* low back pain (A).

Biofeedback

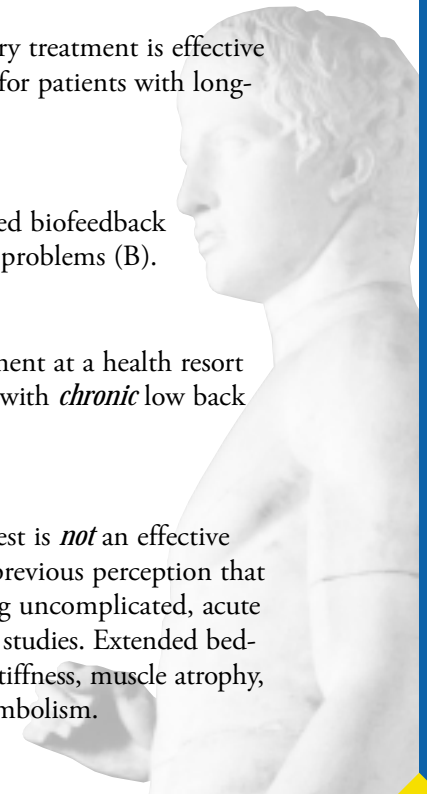
Moderate evidence suggests that EMG-based biofeedback is *not* effective in treating *chronic* low back problems (B).

Health Resorts

Strong evidence shows that intensive treatment at a health resort reduces short-term pain in elderly patients with *chronic* low back problems (A).

Bed-Rest

Strong scientific evidence shows that bed-rest is *not* an effective way to treat *acute* low back pain (A). The previous perception that 1 to 2 days of bed-rest is effective in treating uncomplicated, acute low back pain has been rejected in scientific studies. Extended bed-rest may cause complications such as joint stiffness, muscle atrophy, osteoporosis, pressure sores, and thromboembolism.



Continued Activity

Strong scientific evidence shows that a gradual reactivation of patients suffering from subacute low back pain, in combination with treatment of pain behavior, helps reduce chronic functional problems and sick leave from work (A).

Conservative Treatment Methods for Neck Pain

Laser Treatment

There is limited evidence on the effects of laser treatment for acute and chronic neck pain (C).

Infrared Light

There is only limited evidence that infrared light has any effect at all on *acute* neck pain (C).

Electromagnetic Therapy

There is only limited evidence supporting the effectiveness of electromagnetic therapy in treating *acute* neck pain (C).

Transcutaneous Electrical Nerve Stimulation (TENS)

There is only limited evidence on the effects of TENS in treating *acute* neck pain (C).

Steroid injections

Limited evidence suggests that steroid injections are *not* effective in treating neck pain (C).

Acupuncture

There is no evidence on the effects of acupuncture in treating *acute* neck pain (D). However, strong evidence shows that acupuncture is *not* effective treatment for *chronic* neck pain (A).

Traction

Limited evidence suggests that traction is *not* effective in treating *acute* neck pain (C) and moderate evidence suggests that it is *not* effective in *chronic* neck pain (B).

Cooling Spray and Stretching

Only one controlled study on patients with acute neck pain addressed the effects of cooling spray combined with passive stretching – a common treatment method in sports medicine. The study is of low scientific quality and showed no differences in outcome between active treatment and placebo (C).

Neck Support

Limited evidence suggests that a neck collar is *not* effective in treating acute or chronic neck pain (C).

Manual Therapy

There is only limited evidence on the effects of separate manual therapy for *acute* neck pain (C), but moderate evidence on its effects when manual therapy is applied as one of several methods in a treatment program for *acute* neck problems (B). Regarding *chronic* neck pain, strong evidence shows that manipulation is *not* more effective than physiotherapy methods (A), and moderate evidence suggests that manipulation is *not* effective treatment for *chronic* neck pain (B).

Other Types of Physiotherapy (Massage, Body Movements, and Instruction)

Strong evidence shows that these physiotherapy methods are *not* more effective in treating *chronic* neck pain than are alternative forms of treatment, eg, group exercises, manual therapy, and routine care from a general practitioner (A).

Patient Education

Limited evidence suggests that various types of instruction help reduce *acute* neck pain (C).

Behavioral Therapy

Limited evidence suggests that behavioral therapy is effective in treating *chronic* neck pain (C).

Medication

There is limited evidence on the effects of pain-relieving drugs in treating *acute* neck pain (C), and limited evidence that muscle relaxants are effective in treating *chronic* neck pain (C).

Physical Training

Moderate evidence suggests that active training is more effective than passive methods, eg, massage, heat therapy, and stretching, in treating *acute* neck pain (B).

Surgical Methods

Strong, indirect evidence shows that surgical resection of herniated discs in patients with several weeks of pronounced, lumbar root pain is effective (more effective than chemonucleolysis which in turn is more effective than placebo; A) However, moderate evidence suggests that corresponding surgery is *not* effective in treating neck problems (B). There is no evidence concerning the effects of fusion surgery in treating *chronic* pain in the low back or neck (D).

Psychological Treatment Methods

Strong evidence shows that cognitive behavioral therapy (CBT) reduces problems in patients with *chronic* back pain (A). The effects mainly involve psychological and physiological functions, pain, and medication use. Limited evidence suggests that CBT influences the patient's return to work (C). There is no evidence on the effects of CBT in treating *acute* back or neck problems (D).

Reports Published by SBU

Evaluating Medical Technology and the Efficacy of Health Care (1989)
Preoperative Routines (1989)
Bone Anchored Implants in the Head and Neck Region (1989)
Medical Technologies in Need of Assessment (1989)

The Problem of Back Pain – Conference Report (1990)
Gastroscopy – In the Diagnosis of Dyspepsia (1990)
Vascular Surgery for Arteriosclerosis in the Legs (1990)
Lithotripsy of Kidney Stones and Gallstones (1990)

Back Pain: Causes, Diagnosis, and Treatment (1991)
Bone Marrow Transplantation (1991)
Surgery for Epilepsy (1991)

Prioritization and Rationing in Health Care – Trends in the USA (1992)
Critical Medical Analysis (1992)
PTCA – Percutaneous Transluminal Coronary Angioplasty (1992)
Magnetic Resonance Imaging, MRI (1992)
Stroke (1992)
Psychiatry – The Need for Assessment (1992)

Genetic Diagnosis by PCR (1993)
Diabetic Retinopathy – Importance of Early Detection (1993)
Literature Searching and Evidence Interpretation... (1993)

CABG and PTCA. A Literature Review... (1994)
Traffic Accidents (1994)
Moderately Elevated Blood Pressure (1994)
Nursing Care – The Need for Assessment (1994)

The Economy in Sweden and the Healthcare Sector (1995)
Benefits and Costs of New Medical Methods in Sweden 1960–1992 (1995)
Hysterectomy – Ratings of Appropriateness... (1995)
Mass Screening for Prostate Cancer (1995)
Bone Density Measurement (1995)

Radiotherapy for Cancer, Volumes 1 and 2 (1996)
Critical Issues in Radiotherapy (1996)
Estrogen Treatment (1996)

SBU Evaluates Healthcare Technologies

Longer Life and Better Health – A Report on Prevention (1997)
Treatment with Neuroleptics, Volumes 1 and 2 (1997)
Community Intervention Programs to Prevent Cardiovascular Disease (1997)
Preventing Disease – with Antioxidants, Volumes 1 and 2 (1997)
The Economy in Sweden and the Healthcare Sector II (1997)

Surgical Treatment of Rheumatic Diseases, Volumes 1 and 2 (1998)
Smoking Cessation Methods (1998)
Chest Pain: Surgery, Balloon Dilation, Drugs (1998)
Routine Ultrasound Examination During Pregnancy (1998) nr 139
Evidence-Based Nursing – Radiotherapy in Patients with Cancer (1998), nr 1

Prognostic Methods in Acute Coronary Artery Disease (1999), nr 142
The Patient-Doctor Relationship and the Art of Medicine
– An Evidence-Based Review (1999), nr 144
Advanced Home Health Care and Home Rehabilitation – Reviewing the Scientific
Evidence on Costs and Effects (1999), nr 146
Evidence-Based Physiotherapy for Patients with Neck Pain (1999), nr 101
Evidence-Based Physiotherapy for Patients with Low-Back Pain (1999), nr 102
Evidence-Based Nursing in Treatment of People with Depression (1999), nr 3

Evidence Based Treatment of Urinary Incontinence (2000), nr 143
Evidence-Based Nursing – Treatment of People with Schizophrenia (2000), nr 4
In Vitro Fertilization (IVF) (2000), nr 147
Back Pain, Neck Pain (2000), nr 145

SBU was established in 1987 as an independent agency financed by the government. About thirty people are employed at the SBU secretariat in central Stockholm. An additional 400 researchers and experts are engaged throughout Sweden in various SBU projects. SBU also has a wide international network of experts.

Critical Evaluation

SBU's task is to critically review the scientific basis of methods used in health care and evaluate their costs, risks, and benefits. The main objective is to identify effective and ineffective health practices.

The SBU reports are based on critical reviews of the scientific literature. A project generally takes several years to complete. SBU also publishes a quarterly newsletter, *Science & Practice*. The newsletter has a circulation of 100 000 copies per issue, and at least one issue per year is published in English.

More Information

To learn more about SBU and its reports please call +46-8-412 32 00 or visit the SBU homepage on the Internet, www.sbu.se. You may also fax +46-8-411 32 60, or e-mail your request to info@sbu.se.