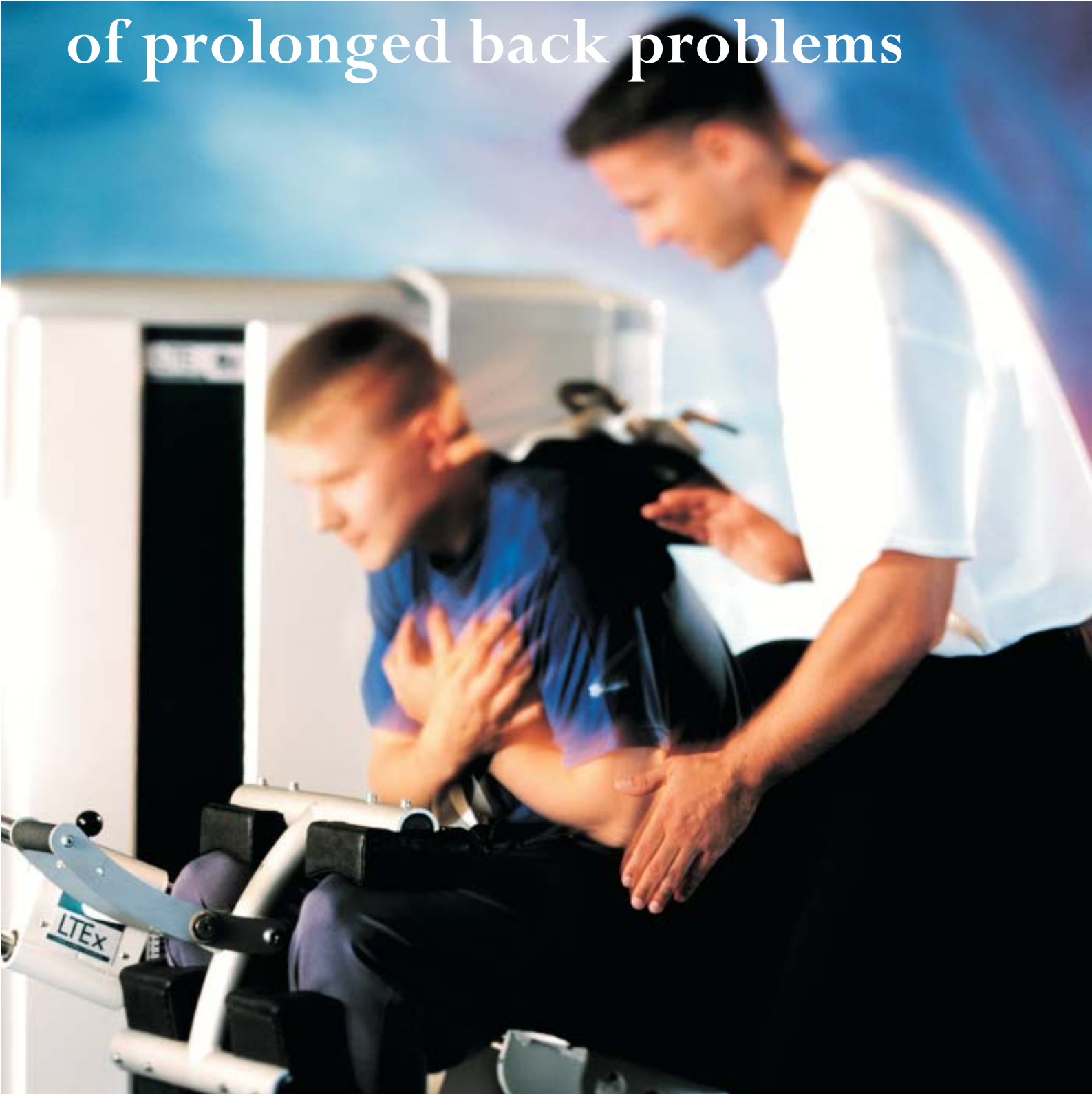


# treatment and rehabilitation of prolonged back problems



Low back pain affects nearly half of the adult population in one given year and up to 80% of all adults will have at least one episode of back pain in their lifetime.

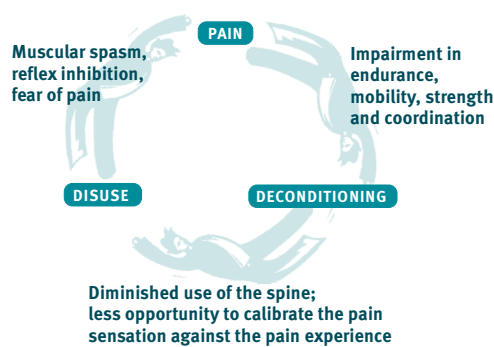
There is a strong evidence for the efficacy of exercise-based interventions in reducing pain and improving function among prolonged and chronic back patients.



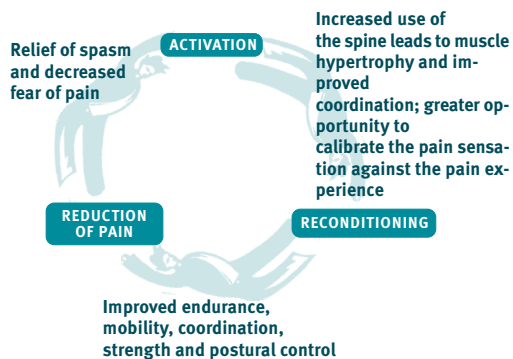
## System Profile

The DBC Active Back Care system is intended for the treatment and rehabilitation of lumbar and thoracic problems providing proven results to patients experiencing prolonged, recurrent, postoperative or post-traumatic problems even of the most severe type.

Deconditioning is a phenomenal feature in chronic low back pain. Pain and subsequent muscular spasm, protective guarding and avoidance behaviour often expose chronic back patients to functional deterioration leading to impairment and disability.



The DBC Active Back Care system aims at restoring normal function – postural control and coordination, endurance, strength and mobility – of the spine. The patient is prepared for normal life activity in parallel with pain reduction.



## Patient Profile

The DBC Active Back Care system is suitable for patients with prolonged, recurrent or chronic back problems with pain and subjective impairment. System suits the needs of most lumbar and thoracic problem patterns.

### Lumbar

- Inflammatory
- Post-traumatic
- Postoperative
- Nerve root compression
- Narrowing of spinal canal
- Pelvic and LBP
- Spondylolisthesis/-lysis
- Non-specific pain

### Thoracic

- Inflammatory
- Post-traumatic
- Postoperative
- Narrowing of spinal canal
- Deformities
- Non-specific pain

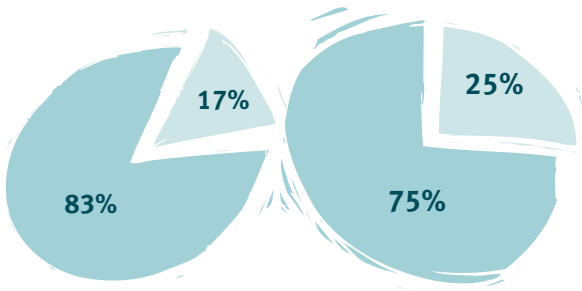
If there are signs or symptoms indicating a severe disease such as malignancy, infection, potential neurological catastrophe or systematic disease, these patients deserve immediate treatment given by a corresponding special unit. Certain specific spine problems such as disc herniations, spinal stenosis and spondylolisthesis may benefit from surgery. The majority of the patients, however, has non-specific mechanical back pain that will benefit from treatment modalities such as training programs.

**There should be a fundamental shift in physical therapy aims and facilities to provide active rehabilitation programs and patient education on prevention and personal responsibility for continued management.**

Clinical Standards Advisory Group Committee, 1994

## Results

DBC Active Back Care system relieves pain and restores function in more than 80 percent of referred patients.



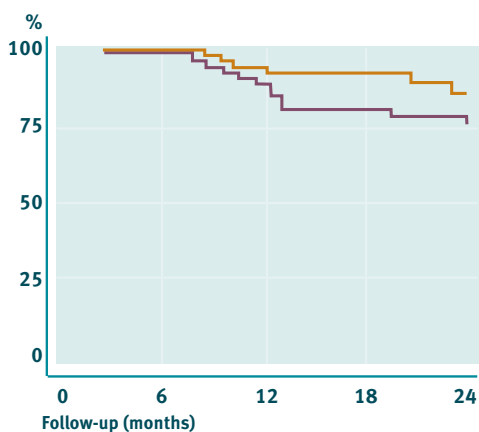
- Decrease of pain
- Increase in strength and mobility
- No change
- No change

A positive response rate of approximately 80 percent is gained by DBC treatment in terms of pain reduction and function improvement. This has been verified in independent studies.

Ref: Kankaanpaa et al, Spine 1999

Ref: Taimela and Harkapaa, Journal of Spinal Disorders 1996

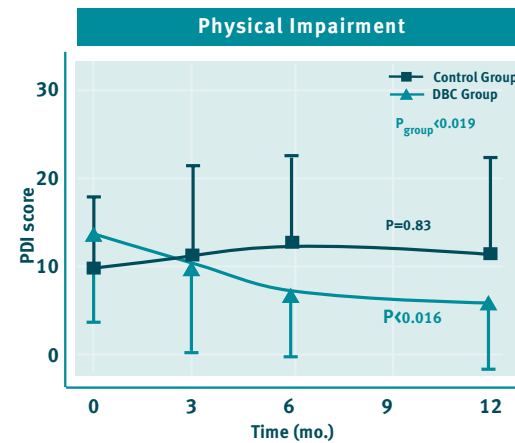
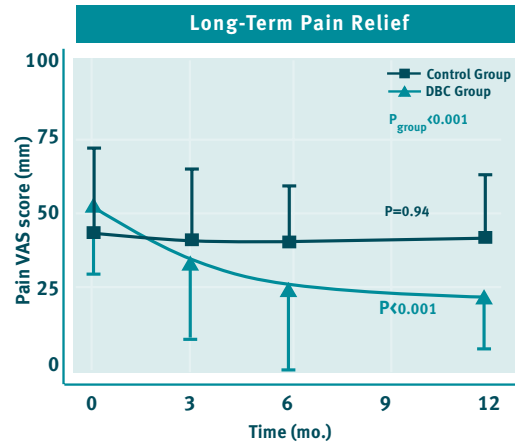
By continuing an active lifestyle with regular exercises after the treatment ends, the DBC results are maintained for years. This holds true both in terms of keeping people at work and free of pain.



**Cumulative proportion without persistent LBP while staying active after DBC treatment.**

**Cumulative proportion not absent from work while staying active after DBC treatment.**

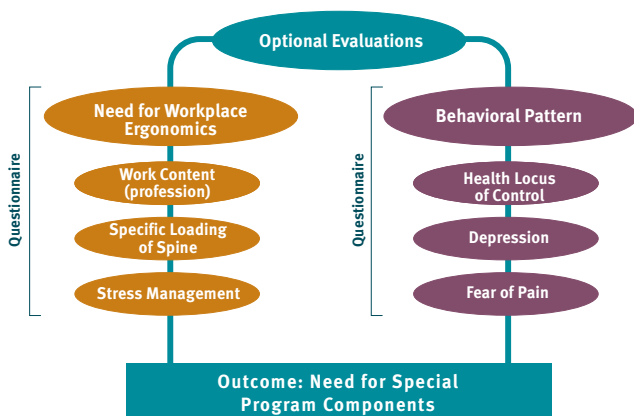
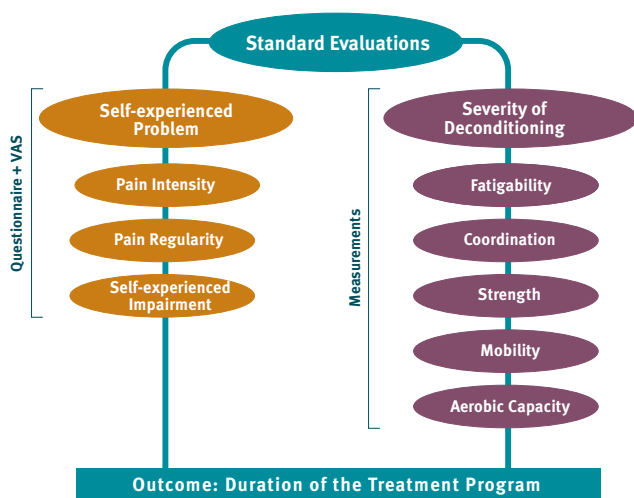
ref: Taimela et al, Spine 2000



A randomized, controlled study verified that the reduction in symptoms and functional restoration gained by a DBC active back treatment group was sustained over a one-year follow-up period. The control group that had received passive, conventional physiotherapy gained little or no benefit during the treatment, and showed no improvement at the one-year follow-up. ref: Kankaanpaa et al, Spine 1999

# patient evaluation

A patient profile is created on the basis of DBC assessment methods relying on clinical examination, questionnaires and functional examination. The patient's pain characteristics, physical impairment and associated psychological distress, and categorisation of the pain pattern are documented. The assessment of the severity of deconditioning is based on a combination of standard and optional evaluations.



## Clinical Examination

Patients are typically referred to DBC treatment by a doctor or insurance provider. A physiotherapist may also examine the patient's neurological, functional and musculoskeletal status when indicated.

## Questionnaire

The questionnaire is completely charting the patient's clinical history and present status of the back, functional status, psychosocial status, general health and working conditions. Validated indexes and measurement tools contain:

### ● Pain Intensity VAS, Frequency and Pain Drawing

The pain intensity and the level of trouble are measured using a 100 mm Visual Analogue Scale. A pain drawing and frequency categories are used to differentiate the severity and obtain guidelines for treatment planning.

### ● Physical Impairment Index

The index is used for assessing the level of self-experienced physical impairment and disability.

### ● RBDS

Rimon's Brief Depression Scale is used to screen for depressive symptoms.

### ● RLC

Recovery Locus of Control tests the patient's attitude towards treatment.

### ● FABQ

Fear Avoidance Behaviour Questionnaire assesses the patient's beliefs on how physical activity and work affect their pain.

### ● PA

Physical Activity is measured by obtaining a MET (metabolic equivalents) score.

## Functional Evaluation

Functional tests consist of electromyographic examinations and measurements of the patient's range of motion.

### ● ROM

Range of motion (ROM) correlates with the severity of the physical condition and gives guidelines for treatment planning. It is measured in terms of extension, flexion, rotation and lateral flexion of the lumbar spine.

### ● Muscular Spasms

Abnormal muscular activity (spasms) is detected with a forward-bending test utilising an EMG analysis.

### ● Lumbar Endurance Assessment

A validated evaluation protocol for the assessment of trunk extensor is used. The patients perform repetitive exercises against loading and the result is expressed in terms of the endurance time and EMG fatigue index. The system provides an objective evaluation of lower-back muscle endurance based on changes in the frequency content of muscle activity.

### ● Balance

Patients with spine problems often have impaired postural control. Especially chronic pain patients seem to suffer from an altered central nervous function, resulting as delays and poor co-ordination in muscle responses. These disturbances reflect to the postural control, and can be assessed with the balance test.

## Evaluation Protocol

### • Baseline Evaluation

The treatment begins with baseline evaluation containing standard and optional evaluations as described in the patient evaluation procedure.

### • Progress Check

Progress in physical function and pain reduction is monitored during the treatment.

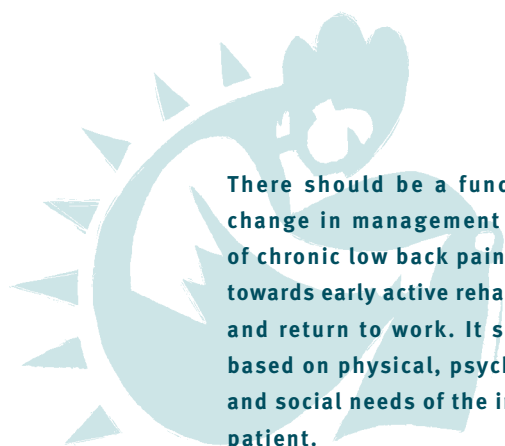
### • Outcome Evaluation

An evaluation of spinal function, pain and impairment levels and overall treatment satisfaction is performed after the treatment in outcome evaluation.

### • Follow-up

Periodical follow-up evaluations can be performed after ongoing treatments or home programmes.

The software produces reports for patients, doctors and employers based on valid outcome criteria. Spine function, pain and working ability may be monitored. Especially objective measurements are used as a tool to motivate the patient and to convince him/her about the maintenance of good results.



**There should be a fundamental change in management strategy of chronic low back pain directed towards early active rehabilitation and return to work. It should be based on physical, psychological and social needs of the individual patient.**

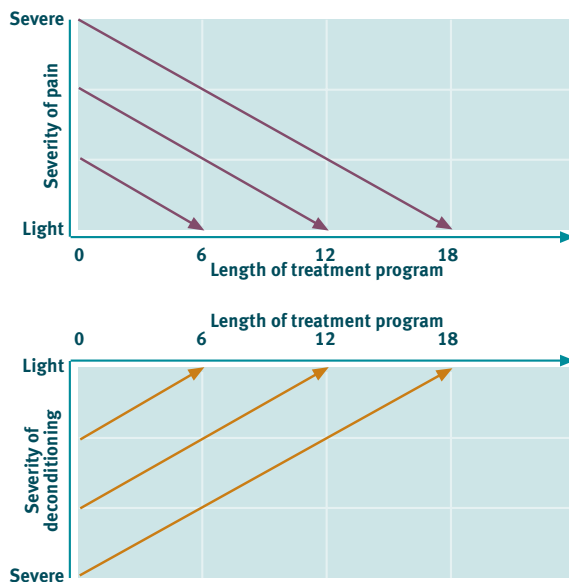
Clinical Standards Advisory Group Committee, 1994

# programme design

The treatment concept consists of several elements designed to support the critical success factors. The modular structure enables entirely individual treatment programs to be built.

The length and design of the individual treatment programme is based on the results of the assessment. The programme length depends on severity of pain and severity of deconditioning. Typically the programme length is from 6-week to 18-weeks followed by ongoing programme and follow-up

## Determining the Length of the Treatment Program

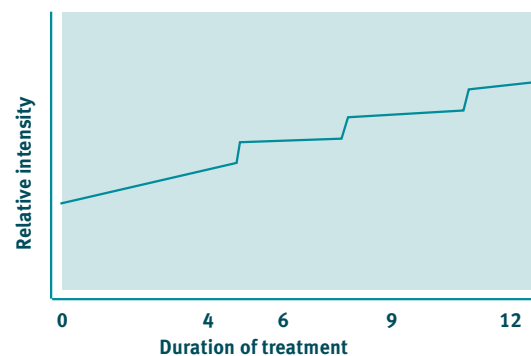


visits.

The program's content is based on pre-selected patterns and relying on proprietary DBC software database on most beneficial previous practices. Pattern-based treatment modes can be employed to focus on correct movements and safety.

In order to exploit the positive influence that group behaviour is known to have on treatment results, treatment sessions are performed in small groups of 1-3 patients. In ongoing programme group size may be higher.

## Progression of Intervention



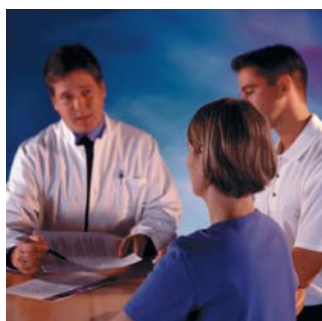
The treatment first focuses on improving the control of movement in the spine. The endurance capacity and range of motion are gradually trained by progressive loading.

## components of treatment



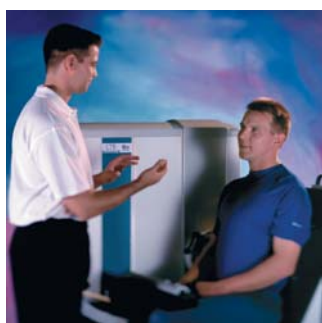
### Therapist's Role

The role of the therapists is to target the loading accurately during exercises especially at the early phase of the active treatment as it plays a crucial role in the success of the treatment program.



### Individual Guidance, Cognitive and Behavioural Support

An elementary part of the treatment program is behavioural and cognitive support given by the therapists. This is given using discussions concerning the "benign nature and good prognosis" of low back pain during treatment sessions. This results in diminished fear of pain and increased self-efficacy beliefs.

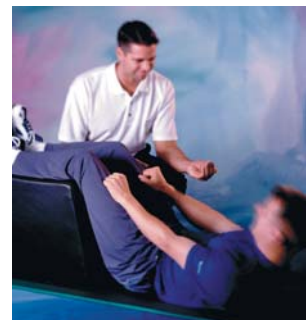


### Device Exercises

For the main treatment component, DBC devices are used to guide the patients through a series of planned, controlled exercises. The natural movement of the lumbar spine are reconstructed using individual adjustments, isolated movements and variable resistance with three-dimensional movement arch when indicated. With the help of the skilful therapist the targeted muscle groups can be safely loaded and a segmental motion of the lumbar spine can be achieved.

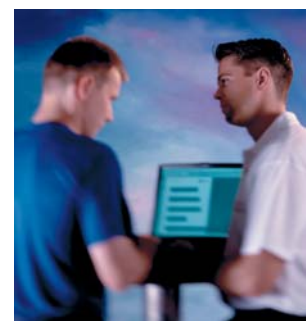
### Relaxation and Functional Exercises

Relaxation between exercises and adequate resting periods are used to relieve muscle tension. Functional exercises are integrated to improve overall function in daily activities.



### Ergonomics, and Psychological and Workplace Intervention

Workplace interventions, individualized ergonomics guidance and psychological support can be added to the programme as supplementary modules based on individual needs.



### Ongoing Programme

Patients are given individual advice and encouraged to stay active after treatment. An individualised continuation programme is designed at the end of treatment. With regular exercises the results are maintained for years.



## system specifications

### Medical Devices

Medical devices produced by DBC represent leading technological innovations in the field of exercise-based rehabilitation incorporating several patented features such as the hip-lock system. High-tech design, features and materials are employed only with the aim to provide targeted exercise, correct movement patterns and patient safety. Easy adaptability to meet individual program requirements is appreciated by treatment professionals worldwide.

Devices for Back Treatment are used in challenging treatment requiring special attention in guaranteeing safety and effectiveness of exercise. Devices for Back Conditioning are mainly used in continuation and ongoing programmes, and in independent training.

### Software

The DBC software is used for patient management. It enables the systematic collection of data and analysis of patient progress. Specific individual and group reports may be printed. Feedback on the progress achieved during the treatment also serves as an essential motivational factor for the patient.



### Quality Management

A quality management application is included in the DBC service concept. In addition to software and general treatment quality management guidelines, each clinic has an access to a secured online database to monitor:

- Overview of patient flow
- Intervention type
- Monitored variables
- Treatment length
- Pain duration
- Diagnosis (pattern)
- Patients demographics
- Results: pain
- Results: response rate (pain)
- Results: impairment
- Results: mobility
- Results: absenteeism

### Active Back Care System

Treatment Concept
Software Questionnaires Manuals
Medical Devices
<b>Back Treatment</b> <ul style="list-style-type: none"> <li>• LTE Lumbar Thoracic Extension</li> <li>• LTF Lumbar Thoracic Flexion</li> <li>• LTR Lumbar Thoracic Rotation</li> <li>• LTL Lumbar Thoracic Lateral Flexion</li> </ul> <b>Back Conditioning</b> <ul style="list-style-type: none"> <li>• LTE Lumbar Thoracic Extension</li> <li>• LTF Lumbar Thoracic Flexion</li> <li>• LTR Lumbar Thoracic Rotation</li> </ul> <b>Multipurpose, lower body</b> <ul style="list-style-type: none"> <li>• HLP Horizontal Leg Press</li> <li>• AB Abdominal Crunch</li> </ul> Accessories
Service Concept
Education Helpdesk Treatment Concept Updates Patient Data Analysis

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