Decreasing disability in chronic back pain through aggressive spine rehabilitation

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Abstract—This paper discusses specific techniques for rehabilitation of chronic low back pain through aggressive physical therapy with behavioral support. The rationale for approaching the outcome dimensions of impairments in back function and pain-related disability as opposed to chronic pain symptoms is explained. This approach requires that impairments in back function are systematically identified through the quantification of trunk flexibility, straight leg raising, back extensor strength, lifting ability, and endurance. The described treatment approach focuses on eliminating those impairments through aggressive, quota-based exercise and is usually completed within 8 weeks. It requires only a modest amount of space and equipment. Useful behavioral techniques for extinguishing pain behaviors, lessening pain beliefs, and for promoting well-being are described. Results from a treatment program using these techniques demonstrate normal back function and reduced disability for a majority of treated persons. Applying such a program to the VA population is an important challenge.

Key words: disability, low back pain, pain-rehabilitation, rehabilitation.

INTRODUCTION

Chronic back pain (CBP) can be a demoralizing health problem: persistent pain symptoms and perceived inability to perform desired activities can lead to a marked reduction of quality of life. For health-care providers of all specialties, caring for these persons is frequently frustrating. Diagnostic tests often correlate poorly with symptoms and even less well with the level of disability of the subjects (1–4). Treatments aimed at symptom reduction often have been exhaustively attempted with only temporary or marginal effectiveness and with few, if any, additional options available.

Over the last several decades, rational approaches to these persons have been developed that utilize the complexity of CBP syndrome to uncover areas other than pain reduction that may be amenable to treatment (5–12). Most would agree that CBP syndrome is a result of complex interactions of pain-producing biological processes, impairments in tissue function, emotional and behavioral responses to pain, and social reinforcers (13–19). Fortunately, the components of CBP syndrome are not firmly interconnected (20). Experienced clinicians will observe some persons with severe pain-producing pathology coping well with their problem and maintaining...
meaningful lifestyles, while others with minimal problems becoming extremely dysfunctional. This dissociation of pain, pathology, and the other components comprising CBP syndrome allows interventions aimed at the nonpain components to be effective in improving the overall quality of life (5,6,8–12). Improvements in impairments in back function, reduction in fears about causing further injury, and reinforcement of wellness behaviors (7,19,21) can all be accomplished with a majority of these persons, and usually translate into a reduction of disabilities. Significantly, these improvements are independent of their effectiveness in reducing pain symptoms (19,21).

This article will outline the methodologies behind a rehabilitation-oriented treatment approach used successfully for a wide variety of persons with CBP (10,22). The treatment model presented has been developed in a non-VA setting. It is postulated that it will prove useful to some veterans in the current VA system. The approach focuses on eliminating impairments in back function, altering fears and beliefs about pain, and reducing back-pain-related disability. This and similar approaches have demonstrated clinical efficacy (5,6,8–12,22). In our experience, most persons with CBP have the potential to obtain normal back function regardless of presenting status (10,22). This includes those with failed back surgery (3 mo postdiscectomy and decompressions, and 6 mo postfusion), those with radicular symptoms, and those with medical legal involvement (22). Because of the aggressive nature of this treatment approach, we recommend a current history and physical be performed, focusing on any limitation from concurrent conditions, which may require modifications in treatment protocol. This includes reviewing the standard medical and surgical causes of back pain (23) that may have been overlooked in previous evaluations or that may have been developed in the interim. This approach to spine rehabilitation requires only a modest amount of space and equipment, but it does mandate a major philosophical commitment by all members of a treatment team to consistently reinforce function despite ongoing pain symptoms (24).

METHODS

Quantification of Back-Pain-Related Deconditioning

The cornerstone of successful rehabilitation of musculoskeletal disorders is to restore the best possible function to the injured body part. This concept assumes that function can be accurately assessed and impairments in function identified.

Long-term avoidance of activities and movements because of back pain results in a significant reduction in physical abilities or deconditioning (25–33). In order to develop an effective treatment plan for a person with CBP syndrome, the negative effects of deconditioning need to be addressed. While it is not possible to measure the baseline conditioning status prior to injury, the current functional capacities of the subject can be measured. Target goals based upon normal populations can be established. Essential areas for quantification are trunk and lower limb flexibility, trunk strength, lifting capacity, and endurance (with repeat testing and no treatment, some improvement may occur). These initial measurements usually reflect psychophysical performance (with inhibition because of fear of injury and pain) and not true physiological abilities, but they still represent a meaningful starting point for the individual (34).

When impairments in back function are identified, treatment can focus on improving these impairments. Throughout the rehabilitation process, repeat quantification of back function is essential and should be performed at least biweekly. This serves as a measure of treatment efficacy for both the subject and treatment team, and can quickly identify persons for whom the approach is ineffective. This allows altering the treatment and behavioral strategies, or the abandonment of this approach, in a timely manner.

Flexibility

Normal mobility is essential for performing many daily activities. Simple tasks, such as picking up clothes from the floor, leaning into a car, or picking up children, are taken for granted. Impairments in trunk flexibility in most persons with CBP are well documented (27,35–39). For those with impaired flexibility, these simple chores can be arduous. By simply restoring range of motion, such persons can regain these and other abilities (5,6,8–12,22).

Accurate assessment of spinal mobility is critical for identifying impairment and evaluating treatment outcomes. While numerous techniques for doing so have been documented in the literature (27,35,36,38–45), we recommend the use of a simple inclinometer (Angle/Level, Dejon Tool Co., Covington, OH). The components of motion that can be assessed on clinical evaluation include total lumbosacral flexion, extension, and side flexion, their true lumbar and pelvic (hip) components,
and straight leg raising. As a minimum, we recommend quantification of total lumbosacral flexion and extension with a single inclinometer placed over the T12-L1 spinous processes, and straight leg raising using the inclinometer placed on the bony surface of the proximal tibia (38). Suggested normal range of motion values for lumbosacral mobility are a minimum of 100° of flexion and 25° of extension, and for straight leg raising a minimum of 75°. Recorded measurements can be documented on graphs for quick reference by the subjects and all members of the treatment team (Figure 1).

Trunk Strength

There is ample documentation that chronic low back pain (LBP) sufferers have deficits in trunk strength (25,29,31,46–48). Addison (25) and McNeill (31) discovered an approximate 50 percent reduction in isometric extension strength in persons with chronic LBP compared to the nonimpaired. In a group of postdisectomy and fusion subjects, extension strength measured isokinetically was consistently less than 50 percent of “normal” (49). Weakness probably results from atrophy of the multifidi, iliocostalis, and longissimus muscles resulting from disuse, along with poor and abnormal neuromuscular recruitment of motor units (50).

Trunk strength can be assessed in multiple planes using a variety of techniques; however, sagittal extensor strength seems to be the most important. The three basic approaches to measuring trunk extensor strength are:

1. Isometric (velocity is zero)
2. Isokinetic (velocity is constant while the force exerted is allowed to vary)
3. Isoinertial (velocity is not constant, but the weight is held constant).

All of these techniques are used simply as tools to identify and quantify impairments in trunk strength, and to document progress throughout treatment. We feel that no single method is clearly superior in the rehabilitation process, but instead stress that some form of quantification of strength should be used.

As a relatively inexpensive method of strength testing, we have developed techniques for using simple isoinertial back extension unit (Cybex, Lumex Corp., Ronkonkoma, NY) found in most fitness facilities (Figure 2). This equipment can be used for initial and subsequent quantification of trunk extension strength, and for strength training as subjects proceed through rehabilitation. This also allows easy transfer of exercise programs to health clubs following rehabilitation.

The testing protocol determines the maximum amount of weight that a subject can lift for four repetitions. Strength testing is conducted on a back extension machine (Cybex) in the sitting position. Testing weight is begun at 9 kg. The endpoints for the test are:

![Figure 1](image1.png)

**Figure 1.**
Graph for trunk flexion and extension measured in degrees using a single inclinometer placed at T-12 for a subject with chronic back pain undergoing spine rehabilitation.

![Figure 2](image2.png)

**Figure 2.**
Isoinertial Cybex Back extension exercise equipment.
1. Psychophysical (the subject's self-report that he/she has reached a maximum)
2. Safety (normally 120 percent of the ideal body weight)
3. Form (the person begins to show poor form, i.e., jerking to use momentum or use of the arms or legs to help move the weight).

Normative data for trunk extensor strength has been established both isometrically and isokinetically (47). Based on published isokinetic data (29), we estimate that normal isoinertial extensor strength is 100 to 120 percent of ideal body weight for males and 90 to 110 percent for females, and we attempt to obtain these goals at the completion of rehabilitation. We have found these estimations compatible with strength measurements at treatment completion using isoinertial measurements.

Lifting Capacity

The act of lifting is an integral part of the daily activity of a person, and limitations can significantly impair function both at home and at work. Simple lifting is frequently impaired in CBP with deficits in the range of 30 to 60 percent of normal being noted in prior studies (28,48,51). For this reason, lifting capacity is frequently assessed during evaluation of persons with CBP. Lifting evaluations assess how the spinal functional unit interacts with other functional units (arms, shoulders, hips, and legs) during the performance of a common activity. As with trunk strength testing, isometric, isokinetic, and isoinertial techniques can be used to assess lifting.

An inexpensive method for assessment of lifting ability is the progressive isoinertial lifting evaluation (PILE, 52). Using this protocol, the subject lifts a plastic milk crate as shown in Figure 3 from the floor to waist (0–76.2 cm) and from waist to shoulder level (76.2–137.2 cm) with increasingly heavier loads. Individual weights of 2.26 kg are placed in the crate. Women begin with 2.26 kg and men with 4.53 kg. The individual is then asked to lift and lower the crate four times within 20 s. After each set of four repetitions, the weight is increased by 4.53 kg for men and 2.26 kg for women, until one of three endpoints is reached:

1. Psychophysical: voluntary test termination because of complaints of fatigue or excessive pain
2. Aerobic: when a target heart rate is achieved, 75–85 percent of age-determined maximum heart rate

This form of unconstrained lifting is as close to a “real world” task as possible and allows the individual to use agility and coordination, which are key elements in everyday lifting. We utilize isoinertial lifting as both a testing and training tool. Not only does it help persons regain confidence in their ability to lift, but it also allows the treatment team to compare lifting performance with specific job demands. For the PILE protocol, norms have been determined for both men and women (52). For men, the floor to waist (lumbar) lift was found to be 50 percent of ideal body weight, and waist to shoulder (cervical) lift, 40 percent. For women, these values were 35 percent and 25 percent, respectively.

Cardiovascular Endurance

The effects of inactivity on the cardiovascular system are well documented (32,33,53,54). After prolonged
inactivity there is a significant decrease in VO₂ max., cardiac output, and left ventricular size. There is a concomitant rise in resting heart rate, peripheral vascular resistance, and systolic blood pressure.

There are very few published reports on impairment in endurance in the CBP population. Schmidt (19) and Boumphrey (26) both found significant deficits in aerobic capacity when subjects were compared to nonimpaired controls.

We consider cardiovascular conditioning to be a vital component in the rehabilitation of CBP because of its physiologic effects. There are anecdotal observations by the authors that cardiovascular conditioning increases the pain threshold, decreases feelings of depression and anxiety, and boosts energy, allowing persons to perform daily activities with less fatigue.

The evaluation of cardiovascular deconditioning in the person with CBP is usually performed with a lower limb cycle ergometer, or treadmill. We have derived a method of quantification of lower limb endurance (lower limb work capacity) using an exercise bicycle (Cybex) as a lower limb isokinetic ergometer. Prior to beginning the evaluation, a predetermined target heart rate (80 percent of age-determined maximum heart rate) is established as an endpoint. Heart rate limitations for those with known or suspected cardiac disease are set either by cardiac stress test or by consultation with the primary care physician. Subjects begin at a predetermined work load on the bicycle (i.e., 400 kg-M/min for men or 200 Kg-M/min for women). Work loads are increased every 3 min, depending on the heart rate response and psychophysical tolerance of the individual. Lower limb testing is performed for a maximum of 9 min, and results are recorded as the total Kg-M of work performed during the test. Normal values for lower limb work capacity testing on this equipment have not been established. Based on our experience, we consider less than 7,000 Kg-M/9 min for men and 6,000 Kg-M/9 min for women to be suboptimal. Our goal is to exceed these levels by the completion of rehabilitation.

Disability

Self-reported functional disability is an important outcome measure in back pain evaluation (55). A multitude of scales, questionnaires, and rating systems have been devised to assess the functional status of persons with back pain (55,56). The ones that are most widely accepted and validated are the Roland (57), Oswestry (58), Millon (59), Waddell (60), and Quebec (61) scales.

We have elected to use the Oswestry scale on initial evaluation and program completion. The Oswestry back pain questionnaire consists of 10 sections, covering personal care, lifting, walking, sex life, social life, traveling, and others. The result is expressed on a scale ranging from 0 percent (no difficulties) to 100 percent (highest score for difficulty on all items).

Rehabilitation of CBP
Behavioral Management

Thus far, we have presented straightforward approaches for identifying impairments in back function. Successful elimination of those impairments and subsequent reduction in disabilities using a physical rehabilitation approach will be determined by the ability to elicit increased performance of therapeutic activities (stretching and exercising) despite the presence of chronic pain symptoms (5—10,12,15,16,19,20). Individuals with CBP often have strong pain beliefs (21,62), are fearful about physical activities (63), have low self efficacy (beliefs about their abilities, 64), and believe that exercises may increase pain or cause further injury (63). Many health care providers have similar concerns: they do not perceive persons with pain as having the potential to perform normal or strenuous activities and are cautious about recommending exercises that may be stressful or elicit pain (24). To use aggressive spine rehabilitation techniques, the entire treatment team must hold firm beliefs that the potential for normal function exists despite CBP and consistently express this to clients. Team members should understand pain-related illness behaviors, and the impact of psychosocial factors on reported pain and disability. With an understanding of these issues, and by employing appropriate behavioral techniques to alter fear behaviors, successful rehabilitation can be accomplished in the majority of persons (65).

What a person expresses outwardly with regard to pain is a behavior. Some pain behaviors are termed respondent, and are governed by antecedent and specific noxious stimuli. Automatic responses to acute pain episodes (withdrawal from heat, splinting a badly injured extremity) are examples of this. In chronic pain, however, many behaviors can no longer be perceived as respondent, and are influenced by events that occur during or after the behaviors. These behaviors in response to influencing events are termed operants. Fordyce proposed that some aspects of pain behavior are learned through operant conditioning, where the frequency and strength of pain behaviors are influenced by their consequences (7).
Inadvertent rewards for chronic pain behaviors are frequently given by family, friends, coworkers, and health care providers. Examples of these, termed positive reinforcements, may include such responses to pain behaviors as a spouse expressing concern, an injured worker receiving financial benefits, or a physician prescribing desired medication. In addition to these positive reinforcements are indirect ones, with pain behaviors leading to the avoidance of undesired activities. This is termed avoidance conditioning, and examples include excused absence from burdensome chores, difficult work, or stressful therapeutic exercises. When responses to pain behaviors are perceived by the sufferer as favorable, over time the performance of those pain behaviors will be reinforced, and will recur in order to obtain that desired response (7). To be effective, rehabilitation providers must become aware of their unintentional positive reinforcement of pain behavior. Responses such as excusing a subject from prescribed exercise, or redirecting treatment toward symptom reduction based on increased pain behaviors serve as positive reinforcements of those pain behaviors.

Pain behaviors are also responsive to negative consequences. When behaviors are ignored, or followed by a loss, the frequency of those behaviors will decrease. This is called extinction (7).

In addition to pain behaviors, wellness behaviors are also responsive to operant conditioning and can be reinforced or extinguished. Fear of loss of disability compensation may result in a person avoiding engaging in desired recreational (wellness) activities. Indeed, disability in CBP syndrome is often reinforced by a combination of consequences that reinforce pain behaviors and extinguish wellness behaviors (7,65).

Successful rehabilitation is dependent in part on reversing this process, through lessening pain behaviors and increasing wellness behaviors. The extinction of pain behaviors can be accomplished by not responding in a reinforcing way when they occur. In conversations, pain concerns of subjects can be acknowledged but the discussion redirected by the health care provider to treatment and functional goals. Exercise can be used as a wellness behavior. To be effective, the level of exercise must be therapeutic (at the physiological limit of the person), and performed at a predetermined quota regardless of daily pain levels (5–12,19,21,64,65). Successful performance of these exercises reinforces that wellness can be acquired despite ongoing pain symptoms. The staff must constantly look for opportunities for reinforcing wellness with praise and encouragement for accomplishment of required exercise, and should assign both exercise and nonexercise wellness activities outside the rehabilitation setting.

In addition to reinforcing wellness, successful completion of exercises also decreases fear of pain and improves self efficacy for physical tasks (64), thus weakening pain beliefs (21). As wellness behaviors increase, and pain beliefs lessen, disability usually decreases (5–12,19,21). Indeed, posttreatment disability levels have been demonstrated to be largely dependent on the success of accomplishing these cognitive goals (21).

**Description of Program**

**Evaluation and Elimination of Impairments in Back Function**

Following a careful screening by a physician for concurrent medical illnesses and reversible causes of pain, persons with CBP undergo evaluation by physical and exercise therapists. This includes the quantification of trunk range of motion, straight leg raising, trunk strength, lifting ability, and lower limb work performance using the previously explained techniques. Less quantifiable deficits in range of motion, such as hip and quadriceps tightness, are also evaluated. Initial measurements are recorded on graphs, with impairments in function discussed with subjects. Short-term (1 week) and long-term goals are then established.

During the initial evaluation, subjects are carefully instructed in a home stretching program to aggressively address all impairments in flexibility, and are told to perform all stretches four times per day.

After receiving careful instructions on the correct use of all exercise equipment, subjects enter into treatment sessions in groups of as many as eight. Initial sessions occur 3 times per week and last for 2 hours. Therapy sessions include stretching, aerobic conditioning, general strengthening for major muscle groups, specific back strengthening, and lifting training. Initial sessions focus on form, technique, and mastering the independent use of the equipment. The resistance on all equipment is kept low. We refer to this as level one training. It usually lasts 1 to 2 weeks, depending on the level of deconditioning and level of inhibition exhibited by the individual. These sessions are used to overcome fears and the associated inhibition of movement and to build trust between the person and treatment team. As soon as the goals of level one are accomplished, the subject is moved to level two.
For the majority, exercise quotas can be rapidly increased as inhibition is reduced and efficacy of exercise improves. Remeasurement of range of motion is repeated at the completion of level one (1–2 weeks), in order to ensure compliance and measure progress. This uncovers the individual’s true physiological abilities, which become the focus of treatment during level two of therapy. During this phase, therapy sessions increase to 3 hours, and occur 3 days per week. This phase lasts for 4 to 6 weeks and at its completion all subjects are expected to have reached their goals of normal back function.

Intensive and specific exercise with the goal of normalizing trunk strength and lifting capacity is a key focus during this period. Trunk strengthening is performed on isoinertial back extension and rotation equipment and on a Roman chair (Parabody, Ramsey, MN). Lifting training is performed at a PILE lifting station (52) with sets of 10–20 repetitions. For lifting training, subjects are reassured that it is safe to use the back in a normal fashion with a combination of flexion of the back and legs (28,30,34,51,52,66–73). Straight back and leg lifting are discouraged.

Aerobic training is performed using a combination of step aerobics, lead and supervised by the therapist, and quota-based training on an isokinetic upper body ergometer (UBE) and isokinetic bicycle. Subjects are required to exercise at or below their maximum target heart rate and to self-monitor their pulse during aerobic exercise.

**Quota-based Exercise**

In our program, we use a quota-based exercise system that is not pain contingent. People are allowed to rest after a quota of exercise is completed. Workouts are expected to continue in spite of pain complaints. Pain or illness behaviors expressed during exercise may be acknowledged, but not reinforced by the treatment team. By directing subjects to continue exercising despite pain complaints, the team forces them to confront their fears of pain, and their rationalization that pain justifies avoiding normal life activities. When needed, praise is given out for successful completion of exercises (reinforcement of wellness behavior).

**Repeat Quantification of Back Function**

Physical measures of flexibility, strength, endurance, and lifting are repeated at regular (2 week) intervals during treatment and presented in graphic form to the subject. This reinforces success to the subjects and is used by the treatment staff to measure their efficacy and to communicate about progress in a precise numerical way. An example of a typical graph used to demonstrate progress for a subject is shown in Figure 1.

**Reinforcing Improved Function as Impairments Lessen**

Most persons quickly find uses for increased physical abilities in their daily lives. Additionally, the treatment team should look for opportunities to reinforce normal functional activities. If needed, functional assignments are given, including household chores, recreational activities, and return to work recommendations. Those who demonstrate appropriate capacity may return to vigorous recreational activities and heavy occupational duties.

**Team Meetings**

Weekly meetings of the treatment team are essential for assessing the effectiveness of obtaining short-term and long-term treatment goals. At meetings, results of recent tests of back function, current exercise levels, medical concerns, compliance issues, personal behaviors, and discharge plans are systematically discussed. New short-term treatment goals for exercise and functional activities are established. Employed behavioral techniques are reviewed and attempts are made to unify the behavioral approach of the team to insure consistent responses to operant pain and wellness behaviors.

**Posttreatment Recommendations**

Postrehabilitation maintenance training is recommended for all persons. At the very least, this should include daily stretching, and 3 times weekly cardiovascular fitness and lumbar lifting training. Optimally, a comprehensive maintenance regimen should be performed in a health club setting and include back-strengthening exercises.

As pain-relieving treatments have usually been exhausted prior to spine rehabilitation, minimizing back-pain-related impairments through this treatment approach should be considered a final treatment for these persons. Further use of rehabilitation services is strongly discouraged. If needed, appropriate mental health services are usually enlisted during the rehabilitation process, and continued in the posttreatment period. For medical legal cases, most are determined to be at maximum medical recovery following treatment. For some, work capacities are established, that enables appropriate vocational or retraining situations to be developed.
RESULTS

We are directly involved with seven private sector treatment centers that use this approach for treatment of persons with CBP. Results from a prospective study of 85 subjects treated at one center are reported in Table 1. Retrospective quality assessments reveal similar results from all programs. A consistent dropout rate of 20 percent is noted by most centers.

Although the reason for dropout is not clearly stated by these persons, it is probable that many desire a reduction in pain and are uninterested in reducing their level of disability unless they first reduce pain levels. Travel distance and insurance issues are other reasons for dropout.

Interestingly, a significant and sustained reduction of pain complaints has been noted by a majority of persons who completed rehabilitation (74), although this is not the primary goal of treatment.

Table 1. Results from rehabilitation of 86 chronic low back pain subjects using aggressive physical therapy to correct impairments in back function, with behavioral support.

<table>
<thead>
<tr>
<th></th>
<th>Initial</th>
<th>3 Month Follow-up</th>
<th>12 Month Follow-up</th>
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<tbody>
<tr>
<td>Pain Intensity (0-10)</td>
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<tr>
<td>Back</td>
<td>5.9</td>
<td>4.2**</td>
<td>4.3**</td>
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<tr>
<td>Leg</td>
<td>4.2</td>
<td>3.2*</td>
<td>3.0*</td>
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<tr>
<td>Oswestry Back Pain</td>
<td>42</td>
<td>24**</td>
<td>26**</td>
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<tr>
<td>Disability (0-100)</td>
<td></td>
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<tr>
<td>Trunk Flexion (°)</td>
<td>82</td>
<td>115**</td>
<td></td>
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<tr>
<td>Straight Leg Raising (°)</td>
<td></td>
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<tr>
<td>Right</td>
<td>75</td>
<td>91**</td>
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<tr>
<td>Left</td>
<td>73</td>
<td>91**</td>
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<tr>
<td>Trunk Strength (%IBW)</td>
<td>50</td>
<td>100**</td>
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<tr>
<td>PILE (%IBW)</td>
<td></td>
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<tr>
<td>Lumbar</td>
<td>17</td>
<td>39**</td>
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<tr>
<td>Cervical</td>
<td>17</td>
<td>31**</td>
<td></td>
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<tr>
<td>Bicycle (KgM/9 min)</td>
<td>4900</td>
<td>6400**</td>
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</table>

PILE = Progressive Isometric Lifting Evaluation; %IBW = Percent Ideal Body Weight; *p<0.05; **p<0.01 (p values are for T-test comparison of initial to 3 month, and initial to 12 month measures).

CONCLUSION

The person with CBP has much to gain through an aggressive rehabilitation program. The goals of rehabilitation must focus on maximizing the functional capacities of the back and the person as a whole. Primary pain reduction should not be the focal point of rehabilitation, although significant pain reduction frequently does result from improved back function.

The cornerstone of effective spine rehabilitation is the systematic elimination of impairment in back function. Initial and repeat quantification of trunk flexibility, straight leg raising, back extensor strength, lifting ability, and endurance are needed to define the extent of these impairments. Quota-based exercise programs designed to eliminate impairments are developed to accomplish specific personal goals. Frequent quantification of back function is used to document progress. Some discomfort should be expected during exercise, but if exercise is done with a gradually increasing quota, this discomfort should be minimal.

Effective use of this approach requires the use of behavioral techniques to diminish pain behaviors, fears, and pain beliefs, and to increase self-efficacy and wellness behaviors.

All health care providers involved with chronic LBP rehabilitation must be in agreement regarding these rehabilitation principles. The subject must receive a consistent message that he/she can safely reestablish a normal back function despite pain symptoms, and that back pain does not limit the potential to enjoy a meaningful and productive lifestyle.

The VA Challenge

Presently, we are unable to obtain accurate and complete data on medical care utilization of veterans with chronic LBP. Outpatient utilization of physician and therapy services is obviously extensive. In 1994, there were over 107,000 inpatient days at a cost of over $31 million to the VA for the care of back pain.

The VA is typical of all medical systems, in that a multitude of approaches exists for treatment of persons with CBP. Frequently, however, a point is reached at which medical treatments yield no additional benefits. The development of aggressive spine rehabilitation programs within the VA system may offer an efficacious and meaningful approach to this problem.

1Data Bank: VA patient treatment files, Boston Development Center, Braintree, MA.
In addition to medical treatment, the issue of back-pain-related disability is of major concern to the VA. In 1994, over $17 billion were paid to veterans with service-connected disabilities. We suspect that a significant percentage of these dollars went to veterans with disabilities because of back pain. Disability benefits in the VA system are based upon impairments in function, and not upon symptoms (75). As an aggressive spine rehabilitation approach improves functional abilities in activities of daily living and lessens impairments and disability in the face of chronic pain, this approach could have a significant impact on the level of disability compensation a veteran would require now and in the future. Additionally, quantification of functional capacities aids vocational specialists in the development of vocational and educational goals for veterans with back pain.

An exciting challenge for the VA system would be to create a network of providers with a unified philosophy, focused on minimizing impairments and disabilities using the described or similar techniques of rehabilitation.

REFERENCES


75. Code of Federal Regulations 38, Dept. VAMC.