Sports Medicine Approach to Low Back Pain

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Abstract and Introduction

Abstract

Low back pain is a common, recurrent affliction in the general population. Research has indicated that, contrary to traditional beliefs, bed rest is not an effective therapy. Existing evidence supports the use of early activity and exercise in treatment of acute and chronic low back pain. Since the sports medicine model of rehabilitation is based on early, progressive activity, its principles can be usefully applied to the management of low back pain in the general population.

Introduction

Low back pain (LBP) is the second most common cause for visits to physicians, and the most common cause of activity limitation in people younger than 45 years of age. It has also been estimated that 70% to 85% of individuals will have LBP at some time in their life. Although LBP is a common problem, the etiology of the discomfort varies among individuals, and many times a definite source cannot be identified. Consequently, treatment recommendations also vary, and both patients and physicians often become frustrated with the care of LBP. Over the past 15 years, emerging evidence has shed new light on the natural history of LBP and its appropriate management. In this paper, I review the current knowledge of LBP and offer treatment advice using the sports medicine model for rehabilitation.

Natural History

Low back pain is often considered to be a self-limiting condition that resolves after an acute episode without any long-term disability. Frequently cited data show that 80% to 90% of patients with acute LBP recover within 12 weeks, regardless of the type of treatment administered. Although encouraging for LBP recovery, this information can also be misleading because it largely reflects only those patients who return to work and stop seeking medical treatment. When pain is used as the outcome measure to define LBP recovery, a different situation is presented. Less than 50% of patients with acute LBP are pain-free after 1 month, and after 3 months more than 40% are still having discomfort. Within 1 year after injury, more than 60% of patients will have had a relapse of pain. Despite 20% to 25% recovery each year, the lifetime recurrence rate of LBP has also been reported. Viewed together, the data on recovery would indicate that the majority of patients with acute LBP return to work within 3 months but that a substantial number of these individuals continue to have persistent or intermittent pain. Thus, in clinical practice, the traditional definitions of acute and chronic often fail to adequately describe LBP. It is becoming evident that LBP is not simply an acute disease that is cured with time but is more often a recurrent problem, similar to asthma, that has symptom-free periods interspersed with frequent exacerbations.

Bed Rest or Early Activity?

Despite little supporting scientific evidence, bed rest was considered the primary treatment for LBP and sciatica from the late 19th century up to modern times. Although some authors during this time did question the use of bed rest, it was not until the 1980s that its efficacy as a treatment for LBP began to be seriously questioned. In fact, so prevalent was the assumption that bed rest was necessary, initial studies only questioned the amount of bed rest that was needed. The foremost article investigating the use of bed rest in LBP was that of Deyo et al in 1986 that compared 7 days of rest to 2 days. They found no difference in functional status or symptoms between the 2 groups. Their article is the basis for several current guidelines that advise no more than 2 days of rest for patients with acute LBP. Other studies have since shown that bed rest of any duration is not an effective therapy for LBP and that it often delays recovery. Sciatica, even when due to nerve-root compression, is not improved with bed rest either. Detrimental results of prolonged bed rest include losses in muscle protein and bone calcium, lumbar muscle atrophy, and undesirable psychologic effects. Despite the evidence against bed rest as a treatment for LBP, many physicians continue to advise its use. In a 1995 survey, 72% of physicians thought that strict bed rest for more than 3 days was an effective treatment for acute LBP.

Although bed rest has been shown to be ineffective and detrimental in the treatment of LBP, is early activity any better? Several studies have looked at the effects of early return to daily activities and progressive exercise programs in the treatment of LBP. One of the best-controlled studies was that of Malininavaa et al in 1992. The authors randomly assigned patients with acute, nonspecific LBP to 1 of 3 treatment groups: (1) bed rest for 2 days; (2) back-mobilizing exercises; or (3) continuation of ordinary activities. At 3-week and 12-week follow-up evaluations, the individuals assigned to ordinary activity had significantly less pain, fewer days absent from work, and less disability than the other 2 groups. Those assigned to bed rest had the slowest recovery. A similar British study produced the same results.

The evidence supporting the use of specific back exercises (eg, flexion and extension) for acute pain is not encouraging. The majority of studies show that specific exercises for LBP are no more beneficial than other conventional treatments for acute pain. The exercise techniques used in these studies, however, were often not appropriately applied to the specific condition or symptom for which they are commonly used. Despite these methodologic problems, most systematic reviews and clinical practice guidelines do not recommend specific back exercises for acute pain.

For chronic LBP, good evidence supports exercise therapy over "usual care" (ie, rest, medications, modalities) by a physician in terms of return to work and functional status. Individuals with chronic back pain who are prescribed graded increases in activity levels also return to work sooner, have less disability, and have fewer pain complaints than traditionally treated patients.

Low back pain in the clinical setting is often an episodic and recurrent condition that plagues individuals throughout their lives; therefore, secondary prevention measures that limit the number and duration of exacerbations are particularly important. Early activity and exercise, once again, seem to be the key to successful management of recurrent LBP. In those studies utilizing early return to activity as therapy for acute LBP, individuals with 1 year or more of follow-up after treatment reported less chronic disability, sick leave, and pain than those assigned bed rest or other traditional treatment. Individuals who remain active and physically fit also have fewer recurrences of LBP, and their attacks are shorter in duration.

The medical evidence in favor of early, progressive activity and avoidance of bed rest for the management of LBP is substantial and serves as the foundation for the sports medicine approach to treatment.
Sports Medicine Model

In the athletic setting, the goal of rehabilitation is to return the athlete to participation in a safe and timely fashion. This is accomplished through early exercise that is controlled, active in nature, and progressive. The sports medicine approach to LBP applies these principles to the rehabilitation of back injuries in the general population. An advantage of this approach is that it can be used with patients who have either acute or chronic nonspecific LBP or sciatica. Once a thorough history and physical examination have ruled out serious or emergency causes for LBP, the basic advice for treatment is the same, regardless of the diagnosis.

Active patient participation is the first component of the sports medicine model that separates it from the more traditional treatments for LBP. Individuals with a back injury are often advised to rest, apply ice or heat, and are prescribed analgesics and muscle relaxants. All of these traditional treatments, however, are passive in nature (ie, patients do not take an active role in their recovery). Passive treatments tend to promote illness behavior by reinforcing the role of being sick and bolstering patients' feelings of loss of control for the back injury and recovery. In contrast, active treatments (eg, early activity) encourage personal control and help to convince patients that they are not as disabled as they often perceive themselves to be after a back injury.

With sports injuries, return to activity is the goal of rehabilitation. Likewise, when managing LBP, treatment should focus on a return to normal function, while de-emphasizing the pain and disability components of the injury. Early and progressive activity using a time-dependent, goal-oriented program is the means by which function is restored in the sports medicine model. In individuals with LBP, studies of exercise programs that base progression on set goals (as opposed to symptoms) have shown that exercise subjects demonstrate less disability than controls.[21,26,28,29] and that as exercise capacity increases, complaints of pain decrease.[25,27] When advising activity for individuals with LBP, however, initial goals often need to be set low to guarantee achievement, thereby encouraging patient compliance and avoiding the frustration of unmet expectations. Progression, though, remains based on preset functional goals instead of pain complaints. Patients must understand that they will most likely experience some initial increase in pain, and that this is not an indication that the exercise is harmful, but simply evidence that out-of-condition muscles are being used, similar to the soreness athletes experience when beginning a training program. The concept of exercising with pain is the most difficult aspect of the sports medicine approach for patients to embrace and often requires more educative effort on the part of the physician to ensure compliance.

Applying the Sports Medicine Model

When patients present with LBP, they should first be advised to avoid bed rest and return to activities of daily living, including work, as soon as possible. Some individuals may require initial lifting restrictions or limited time at work, but every effort should be made to return the patient to a safe work environment. Patients who are severely limited in function due to discomfort should be advised to change position frequently throughout the day. Urging patients not to stay in any one position for more than 30 minutes encourages frequent movement and activity while avoiding bed rest. It must also be emphasized that some element of these position changes should include walking, even if only for brief periods.

Patients should also be instructed to start a low-level aerobic exercise program. Walking is typically the easiest activity for patients to begin, but riding a stationary exercise bicycle or swimming are also acceptable. Patients should be told to perform an activity at least once daily for a specified length of time, followed by weekly increases in the duration of the exercise. Initial time goals may need to be set low for some individuals. For example, a severely limited individual may be advised to walk on a level surface for only 5 minutes each day for a week. The following week, they should increase the time to 7 minutes of daily walking, and the next week they should progress to 10 minutes a day. The patient should continue the weekly increases until the goal of 30 minutes of daily walking is reached. An individual with a higher functional baseline would be able to start the activity at a longer duration but should continue to progress in weekly increments.

While this approach tolerates and expects some complaints of pain, it does not seek to ignore all of the patients' pain. Medication for adequate pain control is often necessary to enable patients to take part in an exercise program. Since the goal is to increase functional activity throughout the day, analgesic medication is often more effective when used on a time-dependent dosing schedule rather than on a symptom-dependent "as needed" basis. Patients must also be warned to seek medical attention if they develop bowel or bladder dysfunction, saddle anesthesia, bilateral paresthesia, or other extremity weakness. Those who question the safety of low-level exercise with LBP can be assured that, in studies utilizing activity in the treatment of both acute LBP and chronic LBP, there has been no evidence of adverse complications. In fact, an in vivo investigation of disk pressures has shown that walking exerts no more force on the spine than sitting.[41]

After initial recovery from functional limitations, patients may require an individually tailored exercise program based on their specific diagnoses, muscle imbalances, or job tasks. These individuals will need referral to a formal physical therapy program to complete their injury rehabilitation. Patients should also be encouraged to continue their aerobic exercise program to help prevent future recurrences of LBP and to take advantage of the general health benefits of frequent exercise. The sports medicine approach for the management of LBP is summarized in the Table.

Low back pain is a common and recurrent problem in the general population. Recent evidence has shown that early activity and exercise is more beneficial than bed rest for both initial recovery and secondary prevention of future problems. Based on this knowledge, the sports medicine model of injury rehabilitation utilizing early and progressive activity can be effectively applied to the management of LBP in the general population.

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