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EFFECTIVENESS OF EXERCISE AND PHYSIOTHERAPY FOR LUMBO-SACRAL PAIN

A Review of Reviews

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ABSTRACT

Study Design: A review of reviews (including meta-analyses, systematic reviews and review classifications and where relevant Randomized Controlled Trials) is performed.

Summary of Background Data: Low back pain continues to be one of the most significant healthcare problems I most societies and countries. Numerous non-operative conservative treatments for LBP exist. However, questions concerning the effectiveness of physiotherapy treatment for LBP for each stage of LBP such as acute, sub acute and chronic LBP remain unanswered.

Objectives: To evaluate the effectiveness of exercise and physiotherapy for the treatment of LBP; and also to determine the efficacy for these treatments of nonspecific acute, sub acute and chronic LBP as well as for sciatica.

Methods: Sources and databases such as MEDILINE, PUBMED,EMBASE,CENTRAL,CINAHL,PEDro and reference lists of articles were searched. Articles from 1995 to 2006 were searched for, and Randomized Controlled Trials, reviews, meta-analyses articles studying adult patients with LBP regardless of radiation pattern are included.

Results: In this review, a total of 28 articles were identified of which 12 are used for analysis. Exercise therapy decreases pain and improves function in patients with chronic LBP most likely when individually designed exercise programs delivered in a supervised format and stretching and strengthening exercises are utilized.

Conclusions: For acute LBP no treatment is the best treatment even though lumbar stabilization exercises may be of some benefit; exercise is an effective intervention for sub acute LBP but which form of exercise is beneficial is inconclusive and chronic. LBP is best treated with exercise/rehabilitation specifically lumbar and trunk-strengthening exercises with individually designed programs delivered in a supervised format. This paper identifies a need for further and improved research for types of exercises such as yoga and McKenzie method and for effective conservative treatments for sciatica.

INTRODUCTION

Low back pain (LBP) continues to be one of the most-significant healthcare problems in most societies and countries.[1] LBP affects 80% of adults during their lifetime, is a major condition that causes disability, and is one of the main healthcare expenditure categories.[2,4] The causes of LBP include but are not limited to disc herniation, spinal stenosis, spondylosis, spondylolisthesis, pregnancy, degenerative disease of the spine and hips, nerve injury, referred visceral pain, musculoskeletal disorders, lower extremity joint disease, soft-tissue pathologic abnormality and others.[3] It has been suggested that 70% of sufferers are better in 1 month[5] and 80%-90% of patients will recover in 6 weeks without any intervention.[6] However there appears to be a trend toward chronic LBP with 40% of subjects reporting pain even after 6 month[7] and 33% continue to experience pain after 1 to 2 years.[8] Treatment costs of LBP are rising more than 7 percent per year in the United States. The total cost of LBP is estimated in excess of US$170 billion which includes the direct treatment cost of $33-#55 billion per year, and the rest is the indirect cost of lost work days and lost productivity.[10]

Since a majority of patients with LBP will improve with time, patients with chronic pain and those with disc herniation or spinal stenosis are the most likely patient to undergo surgery. Surgical treatment options include the following general types of spinal fusions: posterolateral (instrumented or non instrumented), anterior lumbar interbody, posterior lumbar interbody, and transarticular facet joint screws.[11] Other surgical options include Lumbar Disc Replacement and IDET, or Intradiscal Electro thermal Therapy. In the United States, over 200,00 spinal fusion surgeries are performed each year. While there have been significant advances n spinal fusion devices and surgical techniques. The procedure does not always work reliably. For example, in a review of 4,454 patients in 78 reports, Bono and Lee found the average fusion rage was 85% and the average clinical success rate(pain reduction)was 75%.They also found that a successful spinal fusion takes a relatively long time

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(3-24 months, average 15 months) for healing and recuperation, and causes adverse effects on adjacent levels over time[12]. Success rates of spinal fusion range form 39% to 96%. Reported therapeutic success rates of intradiskal electro thermal therapy range from 60% to 80%.[13]

Numerous non-operative conservative treatments for LBP exist. Often, treatments are combined for better symptom control or relief. The treatment methods are listed below:

Medication: Anti-inflammatory drugs, anti-depressants, opioids, oral steroids, and others.

Spinal Injections: Local anesthetics combined with long-acting corticosteroid injections. This medication combination may be injected into the facet joints or around the nerves of the back of help reduce back pain and radicular leg pain.

Bracing: Braces (orthoses) help support the back and limit movement that may provoke painful episodes. Rarely is bracing a long-term treatment for back pain. Long-term bracing may lead to weakened back and abdominal muscles, which may provoke muscle spasm.

Alternative Therapies: Acupuncture, acupressure, hydrotherapy and magnet therapy are alternative therapies used for treating lumbago.

Lifestyle Modification: Dieting to reach a more 'back friendly' body weight, smoking cessation, and physical activity help maintain a healthy spine.[9]

Massage: The use of massage for LBP is very popular. At it's most basic, massage is a simple way of easing pain, while at the same time promoting relaxation and a feeling of well-being. Soft tissue massage is thought to improve physiological and clinical outcomes by offering the symptomatic relief.[14]

Modalities: Such as Transcutaneous electrical nerve stimulation (TENS), interferential current, ultrasound and others.

Chiropractic care: Spinal manipulation is a widely used treatment for LBP performed primarily by chiropractors.

Physiotherapy: physiotherapy can include modalities such as heat, electrotherapy, ultrasound, TENS, traction; manual therapy such as massage, spinal mobilization, soft tissue mobilization, and a program of stretching and strengthening exercises.

There is a lot of information about the forms of conservative treatments utilized to treat LBP. Several studies and reviews have attempted to answer the question as to whether physiotherapy and exercise are effective treatment methods to use for acute, subacute and chroic LBP, with and without sciatica. While some have addressed one type of treatment and ot comparative studies, a need to update this info still exists. In other words, questions concern most appropriate intervention for LBP remain unanswered. In order to consolidate this information and be able to provide a simple answer, a review of reviews is required. This paper studies the literature available for physiotherapy treatments such as exercise (including yoga, McKenzie, lumbar stabilization, trunk strengthening and general rehabilitation). In addition, it attempts to study the efficacy of these treatments for acute, subacute and chronic LBP as well as for sciatica.

METHODS

The search included sources and databases such as MEDLINE, PUBMED, EMBASE, CENTRAL, CINAHL, PEDro. The key words used were: low back pain, leg pain, radiculopathy, sciatica, discogenic pain, treatcome outcome, alternative therapies, exercise, the therapeutic exercise, physiotherapy, rehabilitation, yoga. Moreover, the reference given in relevant identified articles were further examined and if found relevant, they were retrieved and read.

Articles from 1995 to 2006 were searched for, and Randomized Controlled Trials (RCTs), reviews, meta-analyses were included.

Inclusion criteria:

1. Adult patients with LBP regardless of radiation pattern,
2. At least one clinically relevant outcome measure (pain, functional status),
3. Follow up of at least one week,
4. Articles published in English,
5. Methodological sources of over 6/10. This score has been determined by using the PEDro scale. The PEDro scale is an 11-item checklist in which one point is awarded for each satisfied item, except for the first that pertains to external validity. In literature, consensus scores among rates for the total PEDro score has shown good reliability (ICC=0.68).[16]

Exclusion criteria:

1. Pilot studies or studies with fewer than 50 subjects
2. Methodological score of less than 5/10. This score has been determined by using PEDro scale.
3. Studies/reviews that include neck, thoracolumbar or a combination of neck, thoracolumbar and back pain or general pain.
4. Study population too narrow or restrictive.