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Review Article

Rehabilitation for lumbar pain: A comprehensive review on addressing pain and enhancing function in both acute and chronic situations

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ABSTRACT

Lower back pain (LBP) is a prevalent problem that may progress to chronic LBP, resulting in a deterioration of life quality, heightened pain levels, and diminished functionality. Given the diverse demographic affected by LBP, it is crucial to tailor rehabilitation strategies to address the distinct requirements of different patient groups and individuals. This analysis explores various methods of LBP rehabilitation, including categorized treatments and specific rehabilitation techniques, spanning from exercise and physical therapy to spinal manipulation and bracing.

1. Introduction

Low back pain (LBP) is a prevalent problem that may progress to chronic LBP, resulting in a decrease in quality of life, heightened pain, and diminished functionality. Given the diverse demographic affected by LBP, it is crucial to tailor rehabilitation interventions to address the distinct requirements of different patient groups and individuals. This analysis explores a variety of strategies for LBP rehabilitation, including categorized treatment approaches and specific rehabilitation methods such as exercise, physical therapy, spinal manipulation, and bracing.[1–4]

Low back pain (LBP) is influenced by diverse underlying biological factors, including injuries, vertebral deformities, age- or occupation-related changes (such as nerve root compression and spinal stenosis), and even indirect contributors like obesity.[4,5]

However, it's noteworthy that psychological and social factors can unexpectedly exert a substantial impact on LBP for certain individuals. These factors encompass aspects like low educational status, stress, depression, anxiety, job dissatisfaction, and insufficient social support. Notably, there has been a recent association between post-traumatic stress disorder (PTSD) and the development of chronic LBP.

The management of low back pain (LBP) involves a range of interventions, including pharmacological treatment, surgical procedures, and rehabilitation. Rehabilitation, in this context, involves practices like physical therapy, exercise, spinal manipulation, and other relevant approaches. Often, a combination of various therapies and interdisciplinary approaches is considered advantageous for effectively addressing LBP. The purpose of this narrative review is to delineate rehabilitation strategies for individuals experiencing either acute or

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chronic LBP. It is essential to clarify that this article is derived from previously conducted studies and does not entail any research involving human participants or animals conducted by the authors.

2. Materials and Methods

The authors aimed to craft a concise review focusing on rehabilitation in the context of low back pain (LBP). They conducted a literature search from march 2023 using the PubMed database, specifically using the search term 'rehabilitation, physiotherapy, rehabilitation medicine, low back pain.' Additionally, they explored the reference lists of articles.

And also authors from different countries were adding the available local data of there proffessional experience.

3. Discussion

The diverse nature of low back pain (LBP) introduces challenges in the diagnostic process. Acute LBP, characterized by new-onset and short-duration pain, often results from a clear cause such as an injury. Nonspecific LBP, which can also manifest acutely, lacks a known anatomical cause. Typically, acute LBP is anticipated to endure for several days or weeks as the underlying injury or tissue damage undergoes healing. Temporal terms are commonly employed in describing LBP: acute LBP persists for less than 4 weeks, sub-acute LBP spans more than four but less than 12 weeks, and chronic LBP (cLBP) persists for more than 12 weeks.[5–8] However, these timeframes may not always have precise boundaries. In some individuals, LBP may take on an episodic nature, marked by periods of remission and relapse, often accompanied by occasional flares, which may be termed persistent LBP. For the purpose of this narrative review, persistent LBP is considered a subtype of cLBP. The transition from acute LBP to cLBP may involve central sensitization or windup, which is an abnormal neurological process.[8–10]

Patients experiencing acute low back pain (LBP) commonly consult healthcare professionals for assistance. However, there is a scarcity of data supporting the superiority of any specific treatment in preventing the progression of acute LBP to chronic LBP (cLBP). The management of an acute LBP episode may include manual therapy and low-impact exercises. Nonpharmacological approaches are preferred during this stage, and surgical interventions are generally discouraged. In certain cases, a brief course of non-opioid analgesics, such as nonsteroidal anti-inflammatory drugs (NSAIDs), may be contemplated.[11–15]

Patients at a heightened risk of developing chronic low back pain (cLBP) may undergo treatment that incorporates physical therapy, behavioral interventions, and other strategies specifically designed to address psychological factors that might impede recovery. An innovative approach, known as psychologically informed physical therapy (PIPT), integrates physical therapy with cognitive therapy, aiming to prevent the progression of LBP into a chronic condition.

The stepped care paradigm proposes that the initial management of acute low back pain (LBP) should involve cost-effective and conservative interventions, progressing to more complex and expensive treatments as necessary. It's important to note that not all patients are suitable candidates for physical therapy or similar techniques, as they may not derive benefits and could potentially experience adverse effects. Therefore, the recommendation of physical therapy for the care of acute LBP should not be hastily made. The underlying principle is that many individuals with acute LBP can recover with minimal intervention, and for those with more severe LBP, a period of conservative intervention can be considered before exploring more aggressive treatments.[15–18]

4. Treatment-Based Classifications

Treatment-based classifications in physiotherapy management for low back pain (LBP) constitute a multifaceted subject, involving diverse rehabilitation approaches. Clinicians may find themselves directing patients towards symptomatic care, movement control, or a functional approach. Symptomatic care is tailored for individuals experiencing new or recurrent LBP episodes with noticeable symptoms. Movement control is deemed appropriate for patients dealing with moderate pain and disability. On the other hand, the functional approach is designed for individuals with mild LBP and disability, concentrating on addressing functional deficits.[19–22]

Certainly, exercise is recognized as a crucial component in the management of various forms of low back pain (LBP). Different exercise-based approaches can have distinct effects on LBP patients. Here are some notable exercise-based strategies:

5. Core-Strengthening Exercises

Effect: Core-strengthening exercises, focusing on muscles around the abdomen and lower back, can enhance stability and support for the spine.

6. Flexibility and Stretching Exercises

Effect: Stretching exercises can improve flexibility and alleviate muscle tightness, potentially reducing strain on the lower back.

7. Aerobic Exercise

Effect: Engaging in aerobic activities like walking, swimming, or cycling can enhance overall cardiovascular

fitness and contribute to weight management, which is beneficial for LBP.

8. Yoga and Pilates

Effect: These mind-body exercises emphasize flexibility, strength, and controlled movements, promoting better posture and reducing stress on the spine.

9. Stabilization Exercises

Effect: These exercises target specific muscles to enhance spinal stability, potentially reducing the risk of recurrent LBP episodes.

10. McKenzie Method

Effect: Involving a series of exercises and movements, the McKenzie Method aims to centralize or alleviate radiating pain and improve spinal alignment.

11. Strengthening of Global Muscles

Effect: Targeting larger muscle groups, such as the hamstrings and quadriceps, can contribute to overall strength and stability, positively impacting LBP.

12. Mind-Body Exercises (Tai Chi, Qigong)

Effect: Mind-body exercises can improve body awareness, posture, and balance, potentially reducing the impact of LBP on daily activities.

It's important to note that the effectiveness of exercise-based approaches can vary among individuals, and a tailored exercise program based on the specific needs and condition of the LBP patient is often recommended. Before initiating any exercise regimen, individuals with LBP should consult with healthcare professionals or physiotherapists to ensure that the chosen exercises are safe and appropriate for their particular situation.

12.1. Spinal manipulation

Is frequently utilized by chiropractors and manual therapists as a therapeutic approach for treating low back pain (LBP). In certain countries, such as Holland, there exists a small group of physicians who have undergone specialized training in musculoskeletal medicine. These physicians are acknowledged within the healthcare system for their specific expertise in musculoskeletal therapy, encompassing various dimensions like spinal manipulation, orthopedics, neurology, radiology, and the medico-legal aspects associated with musculoskeletal disorders.

13. Cognitive Behavioral Therapy

Cognitive Behavioral Therapy (CBT) has demonstrated its effectiveness in the management of chronic low back pain (LBP), resulting in reduced pain, enhanced daily functioning, and an improved quality of life for patients. What sets CBT apart from exercise programs or physical therapy is its focused approach on addressing the psychosocial factors that contribute to LBP. In a meta-review involving 40 studies and 6,858 patients dealing with chronic low back pain, many of whom had previously experienced treatment failures, biopsychosocial rehabilitation proved more effective than standard care. This effectiveness was evident in superior pain control and a notable reduction in disability.

In conclusion, incorporating CBT into the treatment of chronic low back pain (cLBP) can be highly beneficial, given its focus on the psychological and social factors contributing to the condition. The prospect of long-term advantages and the possibility of integrating CBT with other interventions make it a promising strategy for managing cLBP. Nevertheless, it is important to acknowledge the challenge of ensuring patient engagement, particularly when dealing with opioid use, and this consideration should be factored into the treatment planning process.

In a retrospective observational study comprising 174 patients with chronic low back pain (cLBP) linked to Modic type 1 changes, participants utilized a rigid lumbar brace for a duration of three months, with a gradual withdrawal of the brace during this period. The findings revealed that, within three months, 79% of the patients who wore the brace reported a pain improvement of at least 30%. However, upon removing the brace two months later, 65% of these individuals experienced a recurrence of pain.[23–25]

14. Hot and Cold Therapy

In a systematic review and meta-analysis that encompassed nine clinical studies and involved a total of 1,117 patients with low back pain (LBP), the results indicated a notable reduction in pain for both acute and subacute LBP cases when heat wraps were compared to a placebo. Nevertheless, the overall evidence regarding the efficacy of superficially applied hot or cold packs for alleviating LBP pain was deemed limited. Further investigation is warranted, particularly in the context of chronic low back pain (cLBP).[26]

14.1. Taping

Kinesiology Tape, also referred to as balance tape, exhibits potential in diminishing acute nonspecific low back pain (LBP) attributed to repetitive lifting. The tape is administered daily and worn throughout waking hours, totaling approximately 16 hours a day, for several consecutive days.[27–30] In a placebo-controlled trial involving 44 individuals with nonspecific chronic low back pain (cLBP), those treated with kinesiology tape reported a noteworthy reduction in pain compared to the placebo group

in the second week of the study. This pain reduction was sustained through week 4. Additionally, the experimental group demonstrated improvements in disability, reaching significance at week 4, and enhancements in trunk flexion range of motion, which became significant by week 2.[28] Patient Education.

14.2. Traction

Traditional forms of rehabilitation therapy for low back pain (LBP), such as mechanical and manual traction, are becoming less popular as new treatment alternatives emerge. A systematic review and meta-analysis encompassing 32 randomized controlled trials with a total of 2762 participants revealed that traction had limited influence on various factors. These factors encompassed pain intensity, functional improvement, the overall perception of improvement, and the capacity of patients with LBP to return to work.

Interventions that consider the physical, psychological, and social dimensions of pain, known as biopsychosocial interventions, have proven to be more efficacious than basic education or advice in the treatment of lower back pain. These approaches typically concentrate on tackling psychosocial factors, including pain perception, coping skills, goal setting, and challenging unhelpful thoughts.

15. Conclusion

Lower back pain is a prevalent condition that often requires non-pharmacological interventions. A significant challenge in addressing lower back pain lies in the diverse patient populations and the necessity for personalized therapy. Due to the multifaceted nature of lower back pain, it is crucial to customize treatment approaches based on each patient's unique needs and circumstances. It is essential to recognize that what works for one patient may not be equally effective for another. Individualized therapy, whether single or a combination of approaches, is often necessary. In severe cases, bed rest can also be a valuable component of treatment for individuals experiencing low back pain.

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17. Conflict of Interest

None.

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