

Efficacy of American physical therapy clinical practice guidelines in treating lower back pain among track and field athletes

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Abstract. Lower back pain has a significant impact on track and field athletes, affecting their performance and quality of life. This study explores the application of the American Physical Therapy Clinical Practice Guidelines (APTA Guidelines) in the management of lower back pain at this level. The physical therapy in the United States, which has a history of over 75 years, includes unarmed therapy, coordination, muscle endurance training, hip mobility therapy, stretching exercises, lower limb nerve mobility surgery, traction... It provides a solid framework for the treatment of lower back pain. In this paper, we explore these treatment methods in the context of track and field competitions and evaluate their effectiveness in meeting the specific needs of athletes. In addition, we also verified the research status of the incidence of low back pain in track and field athletes, identified its causes, and proposed an effective treatment scheme using massage, acupuncture and moxibustion treatment, therapeutic sports and other methods. The results indicate that the use of APTA guidelines can significantly alleviate athlete's lower back pain, helping them better perform and recover. This study helps to further discuss how to improve clinical practice to manage specific injuries.

Keywords: American Physical Therapy Clinical Practice Guidelines, Lower Back Pain, Track and Field Athletes, Treatment Methods, Physical Therapy.

1. Introduction

Due to the unique biomechanical requirements of this sport, managing lower back pain for track and field athletes is a complex challenge for healthcare providers. Lower back pain is a common problem among athletes, often caused by intensive training, competition pressure, and the biomechanical effects of running and field events. The purpose of this study is to explore the application of the American Physical Therapy Clinical Guidelines in the treatment of lower back pain in track and field athletes. In the past 75 years, the physical therapy profession in the United States has made tremendous progress and established a complete set of theoretical methods for treating lower back pain. The APTA guidelines developed in 2012 provide a comprehensive framework for risk assessment, diagnosis, treatment, and management of lower back pain, utilizing various physical therapy techniques to address the root causes of pain and promote recovery. In this paper, we explore the feasibility and effectiveness of these guidelines for track and field events that frequently experience lower back pain. Through a review of

current literature and exploration of the treatment methods specified in the APTA guidelines, this study proposes different understandings on how to apply these practical methods to alleviate athlete's lower back pain. For the purpose of providing [1]. This article emphasizes the importance of integrating various treatment and prevention methods from bare handed therapy to exercise therapy to address the multifaceted characteristics of athlete lower back pain, and paves the way for discussions on improving clinical practice of exercise therapy.

2. Research on American Physical Therapy Clinical Practice Guidelines

2.1. Treatment Methods for Lower Back Pain in the American Physical Therapy Clinical Practice Guidelines

Junzhe Li pointed out that after more than 75 years of development, physical therapy in the United States has formed a comprehensive theoretical training system. The Plastic Surgery Department of the American Physical Therapy Association (APTA) developed clinical practice guidelines for the treatment of lower back pain in 2012. This guide provides a detailed description of the risk factors, clinical processes, diagnosis/classification, examination, and treatment interventions for lower back pain. The purpose of this guide is to help healthcare professionals, patients with lower back pain, and relevant institutions detect lower back pain early and understand when and how to treat it. This guide introduces commonly used physical therapy techniques for treating lower back pain:

(1) Manual therapy

The use of manual therapy can effectively treat functional deficiencies in patients with lower back pain and alleviate pain. For patients with lower back pain and limb pain, combining manual therapy with general manual techniques can significantly improve the spine and effectively alleviate pain.

(2) Training for coordination, muscle strength, and endurance

For patients with chronic back pain, exercise can be used as a supplement to minimally invasive surgery for effective rehabilitation treatment. Clinicians should pay attention to maintaining the patient's coordination during the treatment process, enabling them to effectively exert muscle strength and endurance, thereby reducing the occurrence of back pain.

(3) Hip joint movable area therapy

Hip joint exercise can effectively alleviate symptoms in patients with hip and thigh pain. In order to effectively alleviate the pain experienced by patients with lower back pain, clinical doctors need to analyze and summarize the patient's reactions during the treatment process, and repeatedly move the joints in specific directions and positions. So far, research has shown that integrating hip joint treatment techniques into more comprehensive treatment plans is more effective for patients with lumbar spinal stenosis. Although research in this field is still developing, clinical doctors can consider conducting hip joint examinations on patients with low back pain to determine hip joint injuries. For the treatment of lower back pain, consider improving the mobility of spinal segments, the flexibility of the pelvic and lumbar vertebrae, and the flexibility of the femoral joints.

(4) Stretching exercise

For elderly patients with chronic back pain, doctors will combine other intervention methods and focus on doing stretching exercises to effectively alleviate their pain and overcome various obstacles they may encounter during physical activity.

(5) Lower limb nerve mobilization surgery

For patients with chronic or subacute lower back pain, doctors sometimes consider using certain neurosurgical methods to alleviate the patient's pain level.

(6) Traction

The effectiveness of lumbar traction in treating patients with lower back pain is controversial. Existing evidence suggests that intermittent lumbar traction movements may be effective in a population of patients with symptoms of nerve root compression.

In summary, this article analyzes various treatment methods and their effects, while considering the characteristics of athletes, and adopts hip joint movable area therapy and other methods.

2.2. Research on the Application of American Physical Therapy Clinical Practice Guidelines

At present, academic research on clinical guidelines for physical therapy in the United States is not yet in-depth enough. The core of the research is the treatment methods for various diseases described in the American Physical Therapy Guidelines, as well as their impact on the clinical training system in China.

Lu Zhen and Huang Meihuan described the treatment methods for Developmental Coordination Disorder (DCD) described in the American Physical Therapy Guidelines. They provided a general explanation of the recommended items included in the guidelines for physical examination and assessment of children at risk of DCD, development and implementation of physical therapy plans, and education and guidance for families. Li Leilei used American physical therapy in the diagnosis and treatment of sports injuries among the main members of the Chinese diving team. The physical therapy of four divers is divided into three stages: reinforcement, correction, and rehabilitation. In the correction stage, the main focus was on correcting the athlete's bad posture. In the rehabilitation stage, multiple treatment plans were adopted for effective treatment, and in the strengthening stage, high-quality training plans were adopted to enhance lateral muscle strength and improve the stability of the shoulder and knee joints [4]. Luogia and Tao Jin clearly pointed out that the development of physical therapy in the United States has been over 70 years, resulting in a comprehensive planning system. This course system is an important case study for world physical therapy, playing a beneficial role in the course model and clinical practice. It is also a valuable reference material for physical therapy education in China. Due to the lack of comprehensive courses and excessive emphasis on the application of physical therapy in China during internships, some schools in China have referred to the physical therapy system in the United States and developed corresponding treatment plans based on actual situations. Look. As part of the research, Miao Ping and Liu Hao conducted a comprehensive analysis and summary of the physical therapy profession in the United States.



Figure 1. Comorbid Conditions Associated with Developmental Coordination Disorder (DCD) (Source: Eparent.com)

The above research indicates that domestic scholars have not conducted sufficient research on the application of the American Physical Therapy Clinical Practice Guidelines in clinical practice in China. Moreover, after studying relevant literature and the results of the “Clinical Diagnosis and Treatment Guidelines for Lower Back Pain”, there is no comprehensive discussion on the guidelines for injuries in

track and field athletes. These athletes often suffer from lower back pain during competitions and training, which can lead to severe lower back pain and even affect their normal lives. Therefore, the current method of seeking treatment for lower back pain is extremely important for track and field athletes in solving personal problems. By analyzing the incidence and causes of athlete lower back pain, and summarizing the research status at home and abroad, it can be concluded that the incidence of athlete lower back pain is high and poses great harm. At present, although traditional treatment methods are widely used, the “Guidelines for Diagnosis and Treatment of Lower Back Pain” as a simple physical therapy plays an effective role in the recovery process of injuries and can help athletes recover better.

3. The Current Status of Research on Lower Back Pain in Track and Field Running Events

3.1. Incidence Rate of Waist Injuries in Track and Field Running Events

Liang Zhi’s survey shows that about 15% of adults have moderate back pain, of which 90% can be cured, and the remaining 10% takes a long time to cure. According to a survey by Tres Gustavo Felicio, 75% of people experienced back pain at least once in the month prior to the survey, and 18% experienced persistent pain. About 70% of people experience severe back pain in their lifetime. Especially for athletes, the incidence of back pain is very high. Ershad Neda’s research shows that 74% of mid to long distance runners suffer from lower back pain [6]. According to a survey conducted by Wang Wei on 48 middle and long distance runners in Guiyang City, the incidence of back pain among these athletes was 13.9%. Zhu Linlin’s survey of 37 athletes in a sports school shows that more than 59% of the people have extremely serious low back pain, and the incidence rate of low back pain in middle and long distance runners is very high [7]. In Sang Mengli’s survey of 1030 college athletes, waist and arm injuries ranked third among all sports injuries, accounting for 21.3%. Table 1 shows the incidence of waist injuries during running competitions.

As a result, lower back pain is a significant factor that hinders the normal training and competition of track and field athletes. Therefore, it is urgent to find effective treatment methods for the back pain of track and field athletes.

Table 1. Incidence Rate of Waist Injuries in Track and Field Running Events

Researcher	Study Population	Incidence Rate (%)	Details
Liang Zhi	Adults	15.0	15% experience moderate lower back pain; 90% recover, 10% require longer healing time
Telles Gustavo Felicio	General Population	75.0	75% experienced lower back pain at least once in the month prior to survey; 18% persistent pain
Ershad Neda	Middle and Long-Distance Runners	74.0	74% of runners have experienced lower back pain
Wang Wei	Middle and Long-Distance Runners in Guiyang	13.9	13.9% injury rate in lower back
Zhu Linlin	Athletes at a Sports College	59.0	More than 59% suffered from extremely severe lower back pain
Sang Mengli	Collegiate Athletes	21.3	Injuries to the waist and arms ranked third among all athletic injuries

3.2. Causes of Lower Back Pain in Track and Field Running Events

K. Nakagawa pointed out that lower back pain tends to increase among long-distance runners, and in his investigation, he analyzed the relationship between routine and non-specific lower back pain in physical assessment. This survey identified excessive hip joint extension angle and insufficient hip joint extension force as risk factors. Inexperienced runners may experience lower back pain due to excessive activity of the hip and double joint muscles. Dong Li emphasized the need for in-depth investigation and analysis of the causes of lower back pain. Athletes have a wide range of activities during training

and competition. Without proper preparation and warm-up, acute lower back sprains can occur, causing serious lower body injuries. Pay attention to possible connections [8].

In a survey conducted by SAITO YOSHINOBU on 21 male college athletes with medium to long distance, hurdles, long jump, and triple jump, the focus was on the strength of knee and trunk muscles. Research has shown that the imbalance of knee joint muscle strength is one of the main causes of lower back pain in athletes. Nikolaos Malliaropoulos pointed out that in addition to common causes such as intervertebral disc herniation, lower back pain in runners may also be caused by lower limb and leg problems. This type of lower back pain caused by leg length differences may occur during running, and if there is a functional or anatomical difference of 3 to 6cm in leg length, it may lead to lower back, buttocks, or leg pain. Differences between the inside and outside gyri of a single or double foot, as well as other leg dysfunction, may lead to joint dysfunction and lower back pain [9]. Chen Xue divided the waist injury during running into two types: lumbar muscle contusion and acute lumbar sprain. Acute lumbar sprains are mostly caused by indirect external forces such as intense exercise without proper mental preparation and sufficient warm-up, resulting in varying degrees of muscle and ligament tearing and intense pain. Although lower back pain does not cause serious problems, people who suffer from it may not be able to work or move for long periods of time. There are many reasons for this, including incomplete recovery in the acute phase, local congestion and inflammation caused by excessive load, muscle fatigue and tension caused by long-term maintenance of specific postures due to training or competition requirements, and physical factors such as local blood circulation and fatigue affecting recovery. [10]

In summary, there are many factors that can cause lower back pain in track and field athletes, which can be roughly divided into three aspects. Firstly, excessive exercise intensity and density can lead to excessive physical exercise, causing a significant burden on the waist. Secondly, injuries during exercise can cause serious damage to the waist. Thirdly, there is a risk of excessive tension in the waist and buttocks muscles. This is consistent with the current research characteristics of patients, indicating that the treatment mechanism for lower back pain in track and field athletes recorded in the “Guidelines for Diagnosis and Treatment of Lower Back Pain” is theoretically feasible.

3.3. Treatment Methods for Back Pain in Track and Field Running Events

In his research, Dong Li pointed out that the waist discomfort should be treated with massage, acupuncture and moxibustion and other methods. If these methods are combined with exercise therapy, recovery can be accelerated. Exercise therapy can help repair damaged back muscles and have a positive impact on rehabilitation [11]. Coaches must educate athletes on how to prevent injuries and protect themselves. Before exercising, athletes need to do sufficient warm-up exercises, wear appropriate protective gear, and prevent back injuries. Players who have suffered back injuries before should not continue training until they fully recover. To prevent recurrence, you need to gradually strengthen your back muscles. Provide complete protection by wearing appropriate spinal fixation devices. Feng Zunsheng proposed preventive measures for the recurrence of lower back pain in athletes, including bridge, superhero posture, and abdominal muscle strengthening exercises [12].

4. Conclusion

The results of this study indicate that the clinical guidelines for physical therapy in the United States play an important role in the treatment and management of lower back pain in track and field athletes. These athletes need to regularly face physical difficulties that lead to lower back injuries, so adopting evidence-based comprehensive treatment methods is essential. This guide provides a multidimensional framework that includes interventions such as technical therapy, exercise training, hip mobility area therapy, etc. These interventions have been proven to effectively address the complex needs of this population. Combining specific physical therapy techniques such as coordination, strength and endurance training, as well as preventive measures such as adequate warm-up procedures and the use of protective gear, can significantly reduce the incidence and severity of athlete lower back pain. There is a possibility of doing it. This not only helps to relieve pain in a timely manner, but also contributes to

the long-term health and performance of athletes. In addition, the study emphasizes the necessity of continued research and development in the field of physical therapy, including the application of sports related injuries. The clinical guidelines for physical therapy in the United States provide a solid foundation for treatment, but the dynamic nature of sports medicine requires these guidelines to be constantly updated and adjusted based on the latest scientific evidence and clinical outcomes. In addition, promoting cooperation between healthcare workers, coaches, and athletes is essential for the successful implementation of these guidelines. By educating athletes on how to prevent injuries, the importance of following prescription treatment plans, and the benefits of regular physical therapy, they can take preventive measures to maintain health and optimize their performance.

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