



SPINAL DISORDERS (DORSOPATHIES) IN ATHLETES AND INNOVATIVE REHABILITATION PROGRAMS: A REVIEW

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ABSTRACT

Spinal disorders, collectively referred to as «dorsopathies», are highly prevalent among athletes engaged in martial arts. Intense physical exertion, injuries, and constant muscle strain in the back contribute to the development of spinal pathologies, negatively affecting athletic performance.

This article examines the primary types of dorsopathies, their impact on athletes' health, and the effectiveness of innovative rehabilitation techniques for recovery and prevention. A comprehensive analysis of recent studies on dorsopathies in martial artists was conducted, along with an evaluation of advanced rehabilitation approaches. In particular, methods such as kinesitherapy, myofascial release, instrumental physiotherapy, neuromuscular stimulation, and psychological support are reviewed. The effectiveness of rehabilitation programs was assessed based on pain reduction, spinal mobility restoration, and improvements in athletic performance.

The research findings demonstrate the high efficacy of innovative rehabilitation programs in the treatment of dorsopathies among martial artists. Significant pain relief, restoration of spinal function, strengthening of the muscular framework, and increased endurance were observed. A comprehensive approach incorporating both physical and psychological methods facilitated faster recovery and reduced the risk of recurrence.

Dorsopathies significantly impact the health and athletic careers of martial artists; however, modern rehabilitation techniques offer new opportunities for effective treatment. An individualized approach that integrates cutting-edge methods allows not only for spinal health restoration but also for enhanced athletic performance. Further research and the adaptation of rehabilitation programs for different martial arts disciplines represent a promising direction.

KEYWORDS: *Dorsopathy, Martial Arts, Rehabilitation, Program, Kinesitherapy, Innovation.*

INTRODUCTION

Spinal disorders, known as dorsopathies, are among the most common musculoskeletal issues. Athletes involved in martial arts are particularly susceptible to these conditions, as intense physical exertion, injuries, and constant muscle tension in the back create favorable conditions for the development of spinal pathologies [2, 4].

This study analyzes the main types of dorsopathies, their impact on athletes' health, and innovative rehabilitation methods aimed at recovery and improving athletic performance.

MUSCULOSKELETAL SYSTEM AND DORSOPATHIES

The musculoskeletal system (MSS) is a complex structure composed of bones, muscles, ligaments, tendons, and nerves that provide support, stability, and movement to the body. The spine plays a central role as the primary axis around which movement occurs [1, 8]. Various musculoskeletal disorders in athletes can cause pain in the back, neck, and limbs, as well as restrict mobility [3, 6].

THE MOST COMMON DORSOPATHIES IN ATHLETES

Osteochondrosis – a degenerative disease of the intervertebral discs, leading to thinning and loss of their shock-absorbing properties. Disc protrusions and herniations – bulging or rupture of intervertebral discs, which can compress nerve roots and cause pain. Myofascial pain syndrome – chronic muscle tension accompanied by pain and restricted mobility. Spondylolisthesis and spondylosis – vertebral instability and degenerative changes caused by trauma and physical stress [5]. Scoliosis and postural disorders – resulting from uneven loads and improper exercise techniques.



IMPACT OF DORSOPATHIES ON MARTIAL ARTISTS

Dorsopathies significantly affect the physical condition and performance of athletes. The main consequences include: Reduced spinal mobility, limiting the effectiveness of offensive and defensive movements. Chronic pain, impairing concentration, endurance, and motivation. Increased risk of serious injuries, such as ligament tears and nerve damage [7]. Psychological stress and emotional burnout due to prolonged pain and declining performance.

INNOVATIVE REHABILITATION METHODS

Modern approaches to the rehabilitation of martial artists aim not only to alleviate symptoms but also to restore spinal function, prevent relapses, and enhance athletic performance. The most advanced recovery techniques include:

Kinesitherapy - a method based on therapeutic movement and controlled physical exercises that: enhances neuromuscular coordination; strengthens the deep stabilizing muscles of the spine; improves joint mobility by activating proprioceptors;

Myofascial release - a technique involving deep massage and pressure on trigger points that: reduces muscle spasms by normalizing fascial tension; increases blood flow and lymphatic drainage, accelerating tissue regeneration; decreases pain by modulating nociceptive input at the spinal cord level;

Instrumental physiotherapy, which includes various hardware-based treatments: laser therapy - stimulates cellular repair and reduces inflammation through photobiomodulation; shockwave therapy - enhances microcirculation and promotes collagen synthesis in tendons and ligaments; magnetotherapy - influences cellular metabolism, accelerating bone and soft tissue healing;

Exoskeletons and robotic trainers – biomechanical rehabilitation devices that: restore movement patterns by engaging correct neuromuscular pathways; reduce compensatory movements that lead to secondary musculoskeletal imbalances; provide progressive load adaptation, ensuring a safe return to sports activity;

Neuromuscular stimulation - a method using electrical impulses to: restore muscle tone and strength without excessive joint load; improve local blood circulation and oxygenation of tissues; re-establish disrupted neuromuscular connections;

Psychological support and cognitive-behavioral therapy (CBT) - an integral component that: helps athletes cope with chronic pain-related anxiety and fear of movement (kinesiophobia); reinforces motivation and goal-setting strategies for rehabilitation; improves stress resilience, reducing the risk of emotional burnout.

CONCLUSION

As evidenced by the presented material, dorsopathies pose a serious challenge for martial artists. However, modern rehabilitation methods, incorporating innovative techniques such as kinesitherapy, instrumental physiotherapy, and essential psychological support, demonstrate high efficacy in treatment. A personalized approach tailored to the specific needs of athletes is a key factor in successful rehabilitation and enhanced athletic performance. Further research and the development of adaptation programs for different martial arts disciplines represent a promising direction in sports medicine.

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