

Research on the Application of Traditional Chinese Medicine Acupuncture in the Rehabilitation Treatment of Sports Injuries

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Abstract: As an integral part of demonstrated significant efficacy in the rehabilitation treatment of sports injuries. This paper explores the mechanisms of acupuncture on the human body, its clinical applications in sports injury rehabilitation, and its status and prospects in international sports medicine across three chapters. Acupuncture can unblock meridians, alleviate pain, regulate the nervous system, and enhance immune function, thereby promoting the repair of injured tissues. Clinical studies have shown that acupuncture is significantly effective in treating common sports injuries such as ankle sprains, rotator cuff injuries, and knee ligament injuries, and it exhibits unique advantages compared to physical therapy and pharmacological treatments. Despite the increasing recognition of acupuncture in international sports medicine, its widespread adoption faces challenges such as insufficient scientific evidence, standardization issues, and international acceptance. This paper aims to provide theoretical support and practical guidance for the application and development of acupuncture in sports injury rehabilitation.

Keywords: traditional Chinese medicine acupuncture, sports injuries, rehabilitation treatment, clinical applications, international research

1. Introduction

Sports injuries are common issues faced by athletes and sports enthusiasts, and effective rehabilitation and return to sports are key focuses in medical and sports science research. As an ancient treatment method, traditional Chinese acupuncture has garnered increasing attention in recent years for its application in sports injury rehabilitation. By regulating the body's meridians and Qi, acupuncture can unblock meridians, alleviate pain, regulate the nervous system, enhance immune function, and offer new options for post-injury rehabilitation. This paper aims to deeply explore the value of acupuncture in sports injury rehabilitation from the perspectives of its mechanisms, clinical applications, and international research, and analyze its future prospects and challenges. Through this research, we hope to provide theoretical support and practical guidance for the application of traditional Chinese acupuncture in sports injury rehabilitation, while also promoting its broader application in international sports medicine.

2. Mechanisms of acupuncture on the human body

Acupuncture, as a traditional Chinese medical therapy, is a form of treatment in which a special needle is inserted into a specific position by a special technique, alleviating pain, regulating the nervous system, enhancing immune function, and promoting tissue repair. The core of acupuncture therapy lies in stimulating the body's meridian system. Meridians are the channels through which Qi and blood circulate throughout the body. By needling specific acupoints, it promotes the flow of Qi and blood, removes blockages in the meridians. The body can achieve a state of yin and yang balance. In terms of pain relief, acupuncture stimulates nerve endings, triggering the release of substances like endorphins and serotonin, which have natural analgesic properties and can regulate pain transmission pathways in the spinal cord and brain, reducing pain sensitivity[1]. Besides local effects, acupuncture also regulates the central nervous system, balancing the sympathetic and parasympathetic nervous systems, improving stress responses, and adjusting emotional and psychological states, which helps alleviate anxiety and depression, thus benefiting psychological recovery after sports injuries[2]. Another significant feature of acupuncture is its ability to enhance immune function by activating immune cells such as T cells, B cells, and natural killer cells, promoting the release of immune factors, and increasing the body's resistance to infections and inflammation, thereby accelerating the repair of damaged tissues[3]. Additionally, needling can promote local blood circulation, improve the supply of nutrients and oxygen, regulate the expression of cytokines and growth factors, and foster cell proliferation and differentiation, thus speeding up the repair and regeneration of muscles, ligaments, and joints. Overall, acupuncture acts through multiple levels and mechanisms, not only effectively alleviating pain and accelerating recovery but also positively impacting overall health, making it a crucial rehabilitation treatment method[4].

3. Acupuncture in clinical applications for sports injury rehabilitation

3.1 Clinical research on acupuncture treatment for common sports injuries

In recent years, international research on acupuncture treatment for sports injuries has gradually increased. Here are some representative research findings: Ankle Sprain A study published in the British Journal of Sports Medicine demonstrated that acupuncture treatment can significantly reduce pain and swelling in patients with acute ankle sprains and accelerate functional recovery[5]. Research conducted by the University of California showed that acupuncture combined with physical therapy is more effective than physical therapy alone in recovering from rotator cuff injuries, with marked improvements in pain scores and shoulder joint mobility[6]. Knee Ligament Injuries A randomized controlled trial in Germany found that acupuncture significantly shortened the rehabilitation time after anterior cruciate ligament reconstruction surgery and improved patients' quality of life. These research results suggest that acupuncture has significant clinical efficacy in treating various common sports injuries[7].

3.2 Comparison of acupuncture with other rehabilitation methods

In sports injury rehabilitation, acupuncture is often used in combination with other rehabilitation treatments (such as physical therapy, pharmacological treatment, etc.) to enhance therapeutic efficacy. The following are comparative studies of acupuncture with other treatment modalities: Regarding the comparison between acupuncture and physical therapy, a French study demonstrated that acupuncture combined with physical therapy showed superior efficacy to physical therapy alone in patients with chronic low back pain, with significant improvements in both pain scores and functional scores. In terms of the comparison between acupuncture and pharmacological treatment, a Swiss study found that acupuncture treatment for acute sports injuries was comparable in effectiveness to non-steroidal anti-inflammatory drugs (NSAIDs), but the acupuncture group showed significantly fewer adverse reactions and better patient compliance[8]. These studies indicate that in sports injury rehabilitation, acupuncture can not only serve as an effective treatment modality but can also be combined with other rehabilitation methods to improve overall therapeutic efficacy while reducing adverse reactions and enhancing patient treatment compliance[9].

4. Prospects and challenges of traditional Chinese medicine acupuncture in sports injury rehabilitation

4.1 Status and prospects of acupuncture in international sports medicine

With the continuous confirmation of acupuncture's efficacy, its status in international sports medicine has gradually increased. Many countries' sports teams and athletes have adopted acupuncture as an important rehabilitation method. Acupuncture can not only accelerate recovery from sports injuries but also improve athletes' overall performance. Some studies indicate that acupuncture can effectively relieve muscle tension and fatigue in athletes, promote muscle recovery, and enhance athletic performance[10]. Additionally, by regulating athletes' physical states, acupuncture can enhance their resistance to injuries and help prevent recurrent sports injuries. These positive effects have increased acupuncture's reputation in the international sports medicine community, laying a foundation for its broad future application[11].

4.2 Challenges in acupuncture for sports injury rehabilitation

Despite the promising prospects of acupuncture in sports injury rehabilitation, its widespread application still faces several challenges. First, the accumulation of scientific evidence needs to be strengthened. Although numerous studies have supported the efficacy of acupuncture, there is still a lack of large-scale, multi-center randomized controlled trials, requiring more high-quality clinical research to further validate its effectiveness. Second, the individualized characteristics of acupuncture treatment make standardization somewhat difficult. Different practitioners may have variations in their operational techniques and acupuncture protocols, affecting the consistency of therapeutic outcomes. Additionally, the international recognition of acupuncture faces challenges. While acupuncture is widely used in Asian countries, particularly in China, its acceptance in Europe and North America remains to be improved, necessitating more international exchange and cooperation to enhance its global recognition[12].

Through the discussions in the above chapters, we can see that Traditional Chinese Medicine acupuncture has unique advantages and broad application prospects in rehabilitation treatment after sports injuries, but it also faces some challenges[11]. Future research should focus on improving the scientific rigor and standardization of acupuncture treatment, further promoting its application in the international sports medicine field.

5. Conclusion

Traditional Chinese Medicine acupuncture demonstrates significant efficacy and broad prospects in sports injury rehabilitation. As a traditional yet effective rehabilitation method, acupuncture can accelerate recovery from sports injuries, improve athletes' overall performance, and has the potential to prevent injury recurrence. However, the promotion and application of acupuncture in international sports medicine face challenges such as insufficient scientific evidence, difficulties in standardization, and the need for increased international recognition. To fully realize acupuncture's potential in sports injury rehabilitation, future research should focus on conducting high-quality clinical trials, promoting the standardization of acupuncture treatment, and enhancing international exchanges and cooperation. Through continuous efforts, acupuncture can occupy a more important position in the field of international sports medicine, providing strong support for athletes' rehabilitation and performance enhancement.

References

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