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The Effect of Psychological Intervention and Exercise Rehabilitation on the Improvement of Patients' Confidence in Osteoporosis Rehabilitation

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Abstract: The integration of psychological intervention and sports rehabilitation in osteoporosis rehabilitation aims to enhance patients' confidence in recovery through the synergistic effects of psychological regulation and functional training. Psychological interventions aim to strengthen self-efficacy, alleviate negative emotions, and stimulate the desire for rehabilitation. Sports rehabilitation improves bone metabolism, strengthens physical function, and enhances the overall rehabilitation experience. Through a multidisciplinary collaboration mechanism and personalized intervention approaches, this approach systematically improves rehabilitation compliance and self-management skills, significantly reduces the risk of falls and re-fractures, creates a supportive rehabilitation environment, promotes the internalization of health beliefs, and provides strong support for long-term rehabilitation outcomes.

Keywords: Osteoporosis; Psychological intervention; Exercise rehabilitation; Rehabilitation confidence; Individualized rehabilitation

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1. Introduction

Osteoporosis, a common chronic degenerative disease, not only weakens bone strength but also has a lasting impact on patients' psychological well-being and daily functioning. Traditional single-treatment approaches are no longer sufficient to meet the complex rehabilitation needs, leading to the emergence of a combined intervention approach. Integrating psychological support with physical rehabilitation not only improves patients' emotional state and physical function but also reshapes their rehabilitation beliefs and motivates self-management. Based on this new rehabilitation philosophy, a multidimensional intervention pathway is developed to enhance overall treatment outcomes through synergistic mechanisms. This approach shifts the rehabilitation model from passive acceptance to active participation, offering practical guidance and significant clinical implications.

2. Theoretical basis of psychological intervention and sports rehabilitation in the treatment of osteoporosis

Osteoporosis results from an imbalance in bone remodeling, with age and decreased estrogen levels being common triggers. Patients often face poor treatment outcomes due to both physical and psychological barriers during rehabilitation. Psychological interventions help enhance patients' motivation for recovery by regulating cognition, emotions, and behavior. For example, cognitive-behavioral therapy can reshape negative thoughts, supportive psychotherapy can reduce feelings of loneliness, and improving self-efficacy is crucial. Exercise rehabilitation activates the bone remodeling process through mechanical stimulation; weight-bearing and resistance exercises can improve bone metabolism and function, providing tangible benefits. Combining these approaches helps osteoporosis patients boost their confidence and improve their rehabilitation outcomes from both psychological and physiological perspectives.

3. Analysis of the intervention path of the combined mode of psychological intervention and sports rehabilitation

3.1. Operation strategies and procedures for integrating psychological intervention and exercise intervention

The treatment process typically begins with a preliminary psychological assessment and physical examination, evaluating the patient's emotional state, self-efficacy, and bone condition to set personalized rehabilitation goals. Psychological interventions, including cognitive-behavioral training, emotional guidance, and belief restructuring, help patients develop positive expectations for their recovery. Additionally, a gradual exercise plan is arranged, such as resistance training, gait balance exercises, and low-intensity aerobic activities, ensuring that patients can train with adequate mental preparation [1,2]. These two approaches are closely integrated during the intervention, with methods like motivational conversations and recording rehabilitation logs being used to reinforce the psychological recognition of the exercise's benefits.

3.2. The synergistic effect of the multidisciplinary team cooperation mechanism in intervention

Team members have clear roles and responsibilities, with information shared openly. The psychological counselor is responsible for conducting emotional interventions and building beliefs, while the rehabilitation therapist designs exercise programs based on bone density and functional levels. The doctor ensures medical safety and the control of intervention boundaries. During the implementation process, regular intervention meetings are held to discuss patient progress, reactions, and psychological adaptation, allowing for timely adjustments to the intensity and frequency of interventions. Nursing staff play a crucial role in daily management, providing life guidance, recording feedback, and promoting rehabilitation. By integrating resources from multiple specialties, not only is the professionalism and precision of interventions enhanced, but a supportive and trusting rehabilitation environment is also created for patients, increasing their willingness to actively participate. This approach helps to steadily boost both psychological and physiological confidence in recovery.

3.3. The implementation of an individualized evaluation and adjustment mechanism in the intervention program

In the initial diagnosis phase, patients undergo anxiety and depression assessments, self-efficacy evaluations,

bone density tests, and motor function evaluations using professional scales to understand their physiological and psychological foundations. During the intervention, a periodic follow-up mechanism is implemented, such as bi-weekly psychological status check-ups and motor endurance tests, to identify potential issues such as fluctuations in motivation, increased pain, or emotional fluctuations during rehabilitation [3,4]. Based on the feedback, intervention strategies are promptly adjusted. For instance, if anxiety significantly increases, the frequency of cognitive interventions is increased; if exercise fatigue becomes noticeable, the training intensity is reduced, and alternative exercises are introduced. This dynamic adjustment ensures that the intervention remains aligned with the patient's actual condition, ensuring the safety and effectiveness of the rehabilitation process while enhancing the patient's active participation and building their confidence over time.

4. The multidimensional influence of joint intervention on the rehabilitation confidence of osteoporosis patients

4.1. The psychological mechanism of emotion regulation and self-efficacy improvement

Enhancing emotional regulation is a key prerequisite for building confidence in rehabilitation. Osteoporosis patients often experience anxiety and depression due to pain, limited mobility, and uncertainty about their future health, which can hinder their willingness to actively participate in rehabilitation. Psychological interventions, such as cognitive restructuring and mindfulness training, help patients identify and manage these negative emotions, encouraging them to shift from passive coping to active control, thereby improving their emotional resilience. On this foundation, an increase in self-efficacy boosts patients' confidence in their ability to recover. By setting and achieving phased goals, patients receive positive feedback throughout the rehabilitation process, which reinforces their confidence in their recovery efforts [5–7]. The interaction between emotions and self-efficacy reduces inner stress and enhances motivation, building a strong psychological foundation that supports continuous recovery and effectively stabilizes and extends the duration of confidence in rehabilitation.

4.2. The supporting role of physical function improvement in the construction of rehabilitation belief

Patients with osteoporosis who undergo regular exercise rehabilitation often show improvements in bone density, muscle strength, and balance. These improvements directly alleviate their fear of falls or fractures. During this process, patients can perceive and quantify changes in their bodies, such as reduced pain, more stable gait, and greater ease in daily activities. These objective improvements reinforce their trust in the effectiveness of the treatment. Functional improvements not only reflect the outcomes of rehabilitation interventions but also serve as empirical feedback, helping patients transition from a state of doubt about whether they can recover to a positive mindset of being actively rehabilitated. When patients recognize that their efforts lead to tangible improvements, their belief in rehabilitation shifts from an abstract expectation to a realistic goal, significantly boosting their self-motivated confidence and willingness to continue with the intervention plan.

4.3. The effect of environmental security and social support on the enhancement of confidence in rehabilitation

In a safe physical environment and with strong family care, patients are more likely to engage in rehabilitation training, reducing anxiety caused by falls or setbacks. The design of barrier-free spaces, the proper use of assistive devices, and the attentive care provided by nursing staff all subtly enhance a sense of security. Social

support, particularly the emotional support and positive feedback from family, friends, and healthcare providers, reinforces the patients' sense of meaning and value in their rehabilitation. Peer interactions in group rehabilitation activities create a supportive psychological environment, making patients feel they are not alone. When patients feel understood, supported, and accompanied, their psychological resilience significantly increases, and their confidence in rehabilitation becomes more stable and profound.

5. Clinical value of combined intervention mode in the practice of osteoporosis rehabilitation

5.1. The improvement path of rehabilitation compliance and self-management behavior

Psychological intervention reshapes patients' perceptions of rehabilitation, reinforcing their sense of its value and encouraging them to view the treatment process as an intrinsic motivation. Sports rehabilitation, on the other hand, provides patients with positive feedback through visible physical improvements over a short period, boosting their confidence in ongoing participation. On this foundation, the intervention team can use tools like rehabilitation logs and goal planning sheets to guide patients in setting daily rehabilitation plans and self-assessment tasks, gradually fostering healthy habits. By involving family members, conducting remote follow-ups, and implementing an incentive feedback system, the continuity and standardization of rehabilitation are enhanced. Through continuous practice and feedback, individuals develop self-regulation and management skills, enhancing their control over the pace and content of rehabilitation. This leads to a dual improvement in psychological and behavioral adherence to rehabilitation, laying a solid foundation for long-term disease management.

5.2. The mechanism of action in fall prevention and risk control of re-fracture

Sports rehabilitation enhances lower limb muscle strength and balance, improves joint flexibility and posture control, which forms the physiological foundation for preventing falls. Psychological interventions effectively alleviate the fear and anxiety caused by fall experiences, preventing further muscle weakness due to fear of movement. During training, therapists can tailor gait simulation exercises and center-of-gravity shifting drills to enhance patients' adaptability to complex environments. Cognitive interventions help reduce the negative association of "movement = danger," enhancing patients' self-protection awareness and risk assessment skills. Environmental assessments and safety guidance, as supplementary measures, assist patients in identifying potential hazards in their daily lives. These multidimensional interventions collectively form a comprehensive fall prevention network that covers cognition, behavior, and environment. This not only effectively reduces the risk of re-fractures but also continuously reinforces patients' confidence in rehabilitation and their ability to live independently with each successful protection.

5.3. The extended effect of health belief establishment on long-term rehabilitation

In the combined intervention, psychological interventions guide patients to shift from a passive belief that "the disease is irreversible" to an active belief that "it can be improved and self-regulated" through education and cognitive restructuring. Exercise rehabilitation, on the other hand, strengthens patients' belief in the effectiveness of their efforts by quantifying physical improvements, making them more confident in their efforts. This confidence is reflected in daily behaviors such as actively following medical advice, regular exercise, and maintaining a healthy diet, which helps extend the benefits of rehabilitation [8–10]. Health beliefs help patients maintain psychological stability when facing health fluctuations or periods of stagnation in rehabilitation, reducing

their tendency to doubt the effectiveness of rehabilitation. The stability of these beliefs enables patients to transition from staged rehabilitation to continuous health management, thereby maximizing the clinical value of the combined intervention over time.

6. Conclusion

The combined use of psychological intervention and sports rehabilitation is increasingly recognized for its comprehensive value in osteoporosis rehabilitation. By improving emotional well-being, self-efficacy, and physical function, it significantly boosts patients' confidence in recovery. The multidisciplinary collaborative mechanism and personalized intervention approach support improved rehabilitation adherence and reduce the risk of re-fracture. Establishing a healthy belief system helps patients develop long-term self-management skills, which extends the benefits of rehabilitation. This model provides theoretical support and practical pathways for building a systematic, continuous, and effective osteoporosis rehabilitation system, with significant clinical value and potential for widespread application.

Disclosure statement

The author declares no conflict of interest.

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