

## Effects of High-Intensity Interval Training versus Traditional Rehabilitation Exercises on Functional Outcomes in Patients with Knee Osteoarthritis: A Randomized Controlled Trial

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**Abstract :** Background: Knee osteoarthritis (OA) is a prevalent musculoskeletal condition characterized by pain and functional impairment. While various rehabilitation approaches have been employed, the effectiveness of high-intensity interval training (HIIT) compared to traditional rehabilitation exercises remains unclear. Objective: This randomized controlled trial aimed to compare the effects of HIIT and traditional rehabilitation exercises on pain reduction, functional improvement, and quality of life in individuals with knee OA. Methods: A total of 120 participants diagnosed with knee OA were randomly allocated into two groups: the HIIT group (n=60) and the traditional rehabilitation group (n=60). The HIIT group participated in a 12-week supervised program consisting of high-intensity interval exercises, while the traditional rehabilitation group followed a conventional physiotherapy regimen. Outcome measures included visual analog scale (VAS) pain scores, Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC), and the Short Form-36 Health Survey (SF-36) at baseline and after the intervention period. Results: Both groups showed significant improvements in pain scores, functional outcomes (WOMAC), and quality of life (SF-36) after 12 weeks of intervention. However, the HIIT group demonstrated superior pain reduction ( $p<0.001$ ), functional improvement ( $p<0.001$ ), and physical health-related quality of life ( $p=0.002$ ) compared to the traditional rehabilitation group. No significant differences were observed in mental health-related quality of life between the two groups. Conclusion: High-intensity interval training appears to be a more effective rehabilitation approach than traditional exercises for individuals with knee osteoarthritis, resulting in greater pain reduction, improved function, and enhanced physical health-related quality of life. These findings suggest that HIIT may represent a promising intervention strategy for managing knee OA and enhancing the overall well-being of affected individuals.

**Keywords :** knee osteoarthritis, high-intensity interval training, traditional rehabilitation exercises, randomized controlled trial, pain reduction, functional improvement, quality of life

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