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EFFECTS OF PILATES EXERCISE ALONG WITH INTERFERENTIAL THERAPY IN PATIENTS WITH KNEE OSTEOARTHRITIS: AN EXPERIMENTAL STUDY

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ABSTRACT

Background: *Osteoarthritis is a common form of degenerative joint disease characterized by the wear and tear and progressive loss of particular cartilage. It is One of the major causes of physical disability & the most common indication for knee replacement. Knee osteoarthritis is classified as primary and secondary depending upon its cause. The main clinical features are pain, stiffness and restrictions in functional activity. Pilates exercise is a mind-body fitness program. Interferential therapy is combined along Pilates exercise to relieve pain, stimulate muscle, increase the local blood flow and reduce edema.*

Objective: *To investigate the effectiveness of Pilates exercise combined with interferential therapy (IFT) on pain and functional outcomes in individuals with knee osteoarthritis.*

Methods: *A pre–post experimental study was conducted among 40 participants aged 35–65 years diagnosed with knee OA. Participants underwent Pilates exercise combined with interferential therapy four sessions per week for four weeks. Pain intensity and functional status were measured using the Visual Analog Scale (VAS) and Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC). Statistical analysis was performed using paired t-test.*

Results: *Significant improvements were observed in VAS scores (Pre: 6.20 ± 0.96; Post: 3.82 ± 1.19) and WOMAC scores (Pre: 59.15 ± 5.58; Post: 27.97 ± 3.64), with $p \leq 0.001$.*

Conclusion: *Pilates exercise combined with interferential therapy is an effective physiotherapeutic intervention for reducing pain and improving functional ability in patients with knee osteoarthritis.*

KEYWORDS: *Knee Osteoarthritis, Pilates Rehabilitation, Interferential Therapy, Pain Management, Physiotherapy.*

INTRODUCTION

Osteoarthritis is a chronic degenerative joint disease characterized by progressive cartilage degradation, subchondral bone remodeling, and functional impairment. Knee osteoarthritis represents one of the leading causes of disability worldwide and significantly affects quality of life.

Age, obesity, repetitive joint stress, and muscular weakness contribute to disease progression. Conservative management strategies aim to reduce pain, enhance joint stability, and improve functional mobility.

Pilates exercise is a structured mind–body rehabilitation approach emphasizing core stability, controlled movement, breathing, and neuromuscular coordination. Previous studies suggest that Pilates training improves flexibility, muscle endurance, and postural alignment.

Interferential therapy (IFT) is widely used for pain modulation through medium-frequency electrical currents that penetrate deeper tissues with reduced skin resistance. Combining therapeutic exercise with electrotherapy may provide synergistic benefits.

Therefore, this study aimed to evaluate the effectiveness of Pilates exercise combined with interferential therapy in individuals with knee osteoarthritis.

MATERIALS AND METHODS

Study Design

Experimental pre-test and post-test study.

Study Setting

Faculty of Physiotherapy OPD, ACS Medical College and Hospital, Chennai, India.

Participants

Forty individuals with clinically diagnosed knee osteoarthritis aged between 35 and 65 years participated in the study.

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Inclusion Criteria

- Diagnosed knee osteoarthritis
- Knee pain and functional limitation
- Age 35–65 years
- Willing participants

Exclusion Criteria

- Neurological disorders
- Recent fractures
- Vascular disorders
- Steroid therapy
- Non-cooperative individuals

Intervention Protocol

Interferential Therapy

- Four-electrode quadripolar placement around the knee
- Beat frequency: 80–100 Hz
- Duration: 15 minutes
- Intensity adjusted to comfortable tingling sensation.

Pilates Exercise Program

- The One Hundred
- Single Leg Stretch
- Double Leg Stretch
- Shoulder Bridge
- Hip Twist Preparation

Sessions were conducted four times per week for four weeks. Each session lasted approximately 50 minutes including warm-up and cool-down exercises**.**

Outcome Measures

- Visual Analog Scale (VAS)
- WOMAC Index

Statistical Analysis

Data were analysed using SPSS version 24. Paired t-test was used to determine pre–post differences. Statistical significance was set at $p \leq 0.001$.

DISCUSSION

The present study demonstrated that combining Pilates exercise with interferential therapy significantly improved pain and functional ability in individuals with knee osteoarthritis.

Pilates training enhances core muscle activation, joint alignment, and neuromuscular control, which may reduce abnormal mechanical stress on the knee joint. Improved trunk stability can indirectly improve lower limb biomechanics and reduce joint loading.

Interferential therapy contributes to analgesia through modulation of nociceptive pathways and gate control mechanisms, facilitating improved participation in therapeutic exercise.

The observed reduction in VAS and WOMAC scores aligns with previous literature suggesting that electrotherapy combined with structured exercise programs provides superior outcomes compared to isolated interventions.

The integration of mind–body exercise principles with electrotherapy may represent an effective conservative rehabilitation strategy for knee osteoarthritis management.

CONCLUSION

Pilates exercise combined with interferential therapy significantly reduces pain and improves functional outcomes in individuals with knee osteoarthritis. This combined rehabilitation approach may be considered an effective conservative physiotherapy intervention.

LIMITATIONS

- Small sample size
- Short intervention duration
- Absence of control group

RECOMMENDATIONS

- Conduct randomized controlled trials with larger samples
- Include long-term follow-up
- Compare Pilates with other strengthening protocols

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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