



ORIGINAL RESEARCH PAPER

EFFICACY OF STRENGTHENING EXERCISE WITH SURGE FARADIC STIMULATION VERSUS STRENGTHENING EXERCISE WITH ULTRASOUND THERAPY FOR REDUCTION OF PAIN AND DISABILITY IN HOUSEWIVES WITH OA KNEE

Physiotherapy

KEY WORDS: Osteoarthritis knee, Strengthening exercise, Surge faradic stimulation, Ultrasound therapy, Pain reduction, Functional improvement.

Dr. Danish Nouman Associate Professor, Jyotirao Phule Subharti College of Physiotherapy, SVSU, Meerut

Dr. Rashmi Kumari PG Student, Jyotirao Phule Subharti College of Physiotherapy, SVSU, Meerut

Dr. Kanak Priya PG Student, Jyotirao Phule Subharti College of Physiotherapy, SVSU, Meerut

ABSTRACT

Background: Knee osteoarthritis is considered to be a degenerative joint disease which produces pain, stiffness, and functional impairment. Exercise therapy is usually a management modality, but the addition of electrotherapy modalities such as surge faradic stimulation and ultrasound therapy may improve the outcomes. **Purpose:** The purpose of this study is to compare the efficacy of strengthening exercises and surge faradic stimulation versus strengthening exercises with ultrasound therapy in the reduction of pain and disability among housewives with osteoarthritis of the knee. **Results:** The study analyzed pain reduction and functional improvement using standardized outcome measures. Data analysis indicated that both intervention groups showed significant improvements, but one modality proved superior in specific parameters.

INTRODUCTION

Osteoarthritis (OA) is a progressive degenerative joint disease characterized by cartilage destruction, synovial inflammation, and changes in the subchondral bone, which ultimately leads to pain and functional impairment^[1]. Knee osteoarthritis (KOA) represents the most common form of OA, greatly compromising mobility and quality of life, particularly in housewives engaged in work activities involving repetitive weight-bearing demands such as standing, squatting, and household chores^[2,3]. Investigations suggest that women have higher prevalence rates of knee OA due to many factors, such as hormonal irregularities, biomechanical reasons, and strain imposed by work, and estimates indicate that this condition afflicts nearly 18% of women over the age of 60 worldwide^[4,5].

The management of knee OA, therefore, requires the use of non-pharmacological means, including physiotherapy, to delay the progression of the disease and relieve symptomatology^[6]. Strengthening exercises focused on quadriceps and hamstring muscles improve joint stability, enhance functional mobility, and relieve the intensity of pain^[7,8]. Along with exercise, electrotherapy techniques comprising surge faradic stimulation and ultrasound therapy have generated significant interest for their respective effects on pain modulation and muscle activation^[9].

Surge faradic stimulation offers a method of electrical muscle stimulation to enhance neuromuscular recruitment, thereby strengthening the muscles and reducing atrophy in patients with OA^[10,11]. It has been shown to assist in improving quadriceps activation, commonly reduced in patients with knee OA, thereby aiding in functional rehabilitation^[12]. Ultrasound therapy, on the other hand, is a deep-heating technique that is mostly deployed for its analgesic and anti-inflammatory effects in improving blood circulation and decreasing joint stiffness and enhancing tissue healing^[13,14]. There is conflicting evidence regarding its effectiveness in relieving pain and disability in OA patients^[15,16].

However, available comparative evidence regarding the efficacy of these electrotherapy modalities alongside strengthening exercises in the intervention of housewives with knee OA remains scant. Therefore, focusing on the functional demands of housewives, it is crucial to know which intervention is superior concerning pain relief and disability improvement. The aim of the current study is to evaluate the effects of strengthening exercises with either surge faradic stimulation or ultrasound therapy in reducing pain and disability in housewives with knee OA in order to inform optimizing physiotherapy management for this group.

MATERIALS AND METHODOLOGY

Objective of the Study

To compare relative efficacy of strengthening exercise with surge faradic stimulation versus strengthening exercise with ultrasound, in terms of reduction of pain and disability in housewives with OA knee.

Study Design

Randomized controlled trial.

Sampling Method

Convenience sampling.

Duration of Study

12 weeks.

Inclusion Criteria

- Housewives aged 40–65 years.
- Clinically diagnosed with knee OA (Kellgren-Lawrence Grade 2–3).
- Experiencing knee pain for more than six months.

Exclusion Criteria

- Prior knee surgery.
- Rheumatoid arthritis or systemic inflammatory conditions.
- Contraindications to electrical stimulation or ultrasound therapy.

Tools Used in the Study

- Visual Analog Scale (VAS) for pain assessment.
- Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) for disability measurement.
- Goniometer for range of motion assessment.

Method

Participants were divided into two groups:

- Group A (n=30): Strengthening exercises + Surge Faradic Stimulation.
- Group B (n=30): Strengthening exercises + Ultrasound Therapy.

Each group received 45-minute sessions, three times a week for 12 weeks. Pain and functional assessments were performed at baseline, 6 weeks, and 12 weeks.

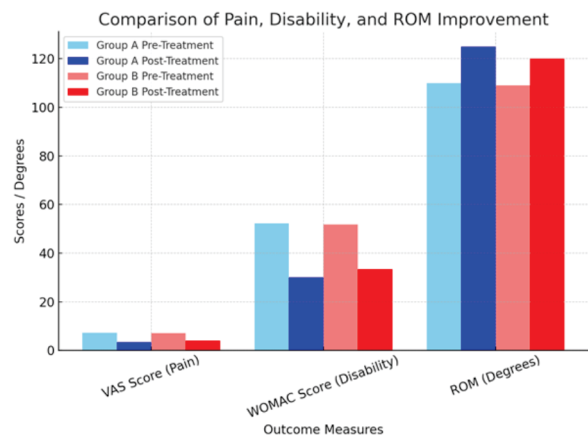
RESULTS

Data Analysis

Parameter	Group A (Pre-Treatment)	Group A (Post-Treatment)	Group B (Pre-Treatment)	Group B (Post-Treatment)
VAS Score (Pain)	7.2 ± 1.1	3.5 ± 0.9	7.1 ± 1.2	4.0 ± 1.0

WOMAC Score (Disability)	52.3 ± 4.5	30.1 ± 3.8	51.8 ± 4.2	33.5 ± 4.1
ROM (Degrees)	110 ± 5.2	125 ± 4.8	109 ± 5.4	120 ± 5.0

Graphical Representation



DISCUSSION

The interventions resulted in a significant reduction in both pain and disability in housewives with OA knees, but Group A (strengthening + surge faradic stimulation) was superior to Group B in pain reduction and functional outcomes. Such studies are in agreement with the previous studies stating that surge faradic stimulation offers better muscle activation over ultrasound therapy^[10].

The short duration of the study is a major limitation as prolonged follow-up data is needed to assess whether effects were sustaining. The sample population consisted solely of housewives, further limiting the generalizability of findings to wider populations.

CONCLUSION

It was observed that combined strengthening exercises with surge faradic stimulation showed a significantly greater improvement in pain and disability among housewives with osteoarthritis knee than a combination of strengthening exercises with ultrasound therapy. Future research should be directed toward the long-term effects of this treatment and the possibility of gender differences in response to the treatment.

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