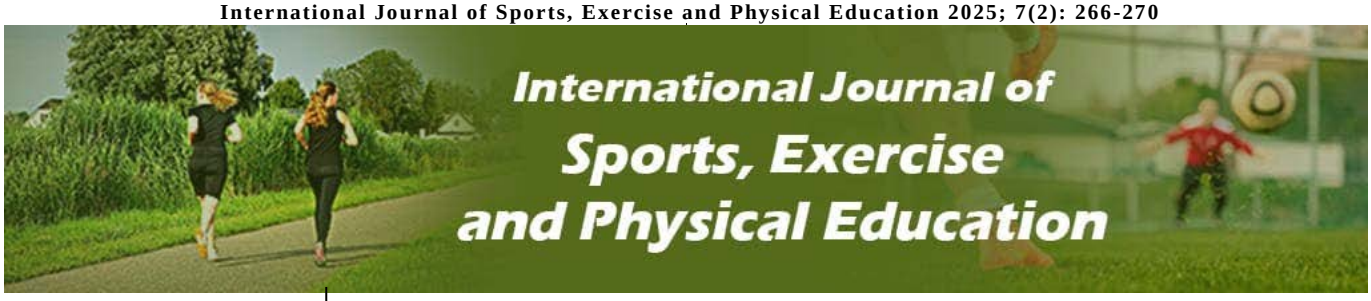

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Monica Srinithi K
Department of Physiotherapy, College of Physiotherapy, Sri Ramakrishna Institute of Paramedical Science, Coimbatore, Tamil Nadu, India

SB Vidhya
Department of Physiotherapy (Pediatrics), College of Physiotherapy, Sri Ramakrishna Institute of Paramedical Science, Coimbatore, Tamil Nadu, India

Sathishkumar M
Department of Physiotherapy, College of Physiotherapy, Sri Ramakrishna Institute of Paramedical Science, Coimbatore, Tamil Nadu, India

Hariharan S
Department of Physiotherapy, College of Physiotherapy, Sri Ramakrishna Institute of Paramedical Science, Coimbatore, Tamil Nadu, India

Corresponding Author:
Monica Srinithi K
Department of Physiotherapy, College of Physiotherapy, Sri Ramakrishna Institute of Paramedical Science, Coimbatore, Tamil Nadu, India

Comparative study between connective tissue massage and sham massage impact on pain, lumbar mobility and quality of life in chronic non-specific low back pain

Monica Srinithi K, SB Vidhya, Sathishkumar M and Hariharan S

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Abstract
Nonspecific low back pain refers to pain that cannot be attributed to any recognizable or specific pathology and is commonly observed in the general population, especially among females. It is considered a major public health concern, with nearly 70 to 85 percent of individuals experiencing it at some point in life. Clinical features typically include stiffness, restriction of spinal movements, and sharp or shooting pain.

The present study aimed to evaluate and compare the effects of connective tissue massage and sham massage on pain reduction, lumbar mobility, and quality of life in adults aged between 18 and 50 years with chronic nonspecific low back pain. A total of twenty-four participants clinically diagnosed with the condition were recruited and randomly allocated into two groups. One group received connective tissue massage combined with conservative treatment, while the other group received sham massage along with the same conservative treatment. Both interventions were administered over three weeks with a frequency of five sessions per week, making a total of fifteen sessions. Outcomes were measured using pain intensity, lumbar mobility, and quality of life before and after the intervention, with reassessment one month after the completion of the sessions.

The findings revealed that participants who received connective tissue massage in combination with physiotherapy exercises demonstrated greater improvements compared to those who received sham massage with physiotherapy exercises. This improvement was observed in terms of pain reduction, enhancement of lumbar mobility, and better quality of life. In conclusion, connective tissue massage when combined with physiotherapy exercise is more effective than sham massage with physiotherapy exercise in managing chronic non specific low back pain. This approach can therefore be considered a beneficial treatment strategy to reduce pain, restore spinal function, and improve overall well-being in affected individuals.

Keywords: Nonspecific low back pain, Connective tissue massage, Sham massage

Introduction
Low back pain (LBP) has been documented historically, with the earliest records found in Egyptian, Greek, Roman, and Arabic texts, including the Edwin Smith papyrus [1]. It is defined as discomfort between the costal margin and inferior gluteal folds, sometimes with leg pain [2, 3]. Macroscopically, LBP is associated with reduced muscle cross-sectional area and fat infiltration, while microscopic changes include altered muscle fiber distribution [4].

LBP is classified as acute (<6 weeks), subacute (6–12 weeks), and chronic (>3 months) [2]. It may be specific, linked to underlying diseases or structural problems [5, 6, 1], or non-specific, with no identifiable pathology and often related to posture or body mechanics [1, 8]. Non-specific chronic LBP is one of the leading health problems worldwide, ranking second for disability and affecting 60–80% of the population, with a 60% recurrence rate [9].

Risk factors include stress, depression, job dissatisfaction, obesity, smoking, prolonged sitting, weak core stability, and multifidus muscle atrophy [8]. Patients often show sharp pain, rigidity, restricted motion, and radiating pain [7]. Assessment is typically done using the Visual Analogue Scale for pain [9], spinal mobility tests [10], and quality of life questionnaires such as the SF-36 [9].

Massage therapy has long been used in traditional medicine, with Swedish massage systematized in the 19th century [11]. Connective tissue massage is applied to zonal, hormonal, and musculoskeletal conditions [12], while sham massage consists of light, unspecific strokes, which may still have health effects through touch [13, 14].

2. Materials and Methodology

2.1 Materials Required

- Treatment table
- Pillows
- Chair
- Oils
- Goniometer
- Consent form
- Assessment chart

2.2 Study Design

A quasi-experimental pre and post design was adopted.

2.2.1 Sample Size

Twenty-four patients diagnosed with chronic non-specific low back pain were recruited.

2.2.2 Sampling Method

Purposive sampling technique was used.

2.2.3 Study Setting

The study was conducted at Sri Ramakrishna Multispecialty Hospital, Coimbatore.

2.2.4 Study Duration

Total study duration was six months.

2.2.5 Treatment Duration

Intervention lasted three weeks, with sessions conducted three times per week for 40 minutes each.

2.2.6 Inclusion Criteria

- Male and female patients aged 18–50 years.
- Chronic low back pain without identifiable cause, persisting >12 weeks.
- Pain localized to lumbar and buttock region.
- Pain score >3 on Visual Analogue Scale.
- Symptoms aggravated by flexion and relieved by extension movements.

2.2.7 Exclusion Criteria

- Other pain syndromes.
- History of spinal surgery or invasive procedures within six months.
- Neurological or psychological disorders.
- Pregnancy.

2.2.8 Outcome Measures

- **Independent variables**: Connective tissue massage, sham massage, physiotherapy exercise.
- **Dependent variables**: Pain, lumbar mobility, quality of life.

2.2.9 Measurement Tools

- Visual Analogue Scale (VAS) for pain.
- Goniometer for lumbar mobility.
- Short Form-36 questionnaire for quality of life.

2.2.10 Treatment Techniques

Patients were randomly assigned into two groups:

- **Experimental group**: Connective tissue massage with physiotherapy exercise.
- **Control group**: Sham massage with physiotherapy exercise.

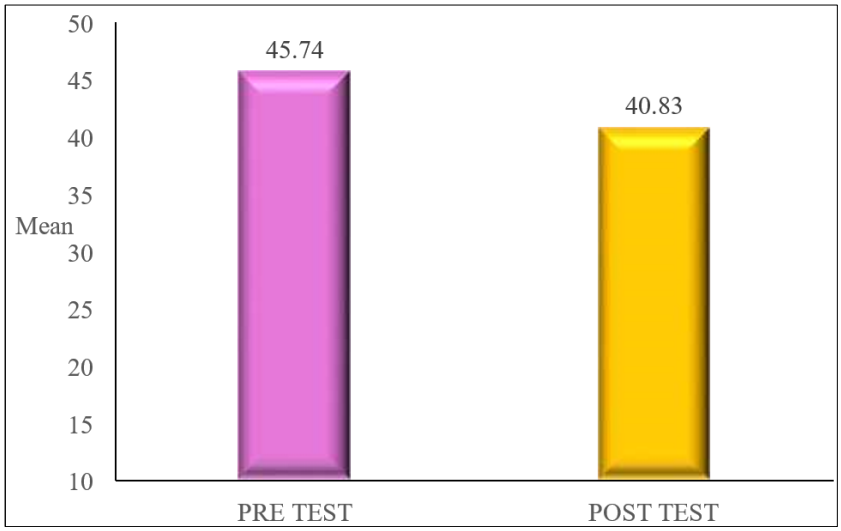
Procedure: Patients diagnosed with chronic non-specific low back pain were selected from the Physiotherapy Department at Sri Ramakrishna Hospital. Informed consent was obtained from all participants. Interventions were provided for three weeks. Baseline assessments included VAS for pain, goniometric evaluation of lumbar mobility, and the Short Form-36 for quality of life. Post-treatment outcomes were reassessed following the intervention period

Connective Tissue Massage	Sham Massage
Participant seated on a stool with back and sacral region exposed, hips and knees flexed at 90°, feet flat on ground.	Massage applied to upper and lower back in sitting position.
CTM performed with short and long pulling strokes in hooking style using the third finger flexed at 45°–60°.	General stroking and kneading applied to erector spinae, latissimus dorsi, and gluteus maximus muscles.
Exercises included: • Lumbar extensor stretch (20 sec × 5 reps) • Posterior pelvic tilt (10 reps) • Shoulder bridging (10 reps) • Cat–Camel exercise (10 reps) • Hip twist (grade 1, 10 reps) • Clam exercise (grade 1, 10 reps) • Hamstring stretch (20 sec × 5 reps).	Massage lasted 15–20 minutes per session.
Program: 15 sessions over 3 weeks, on alternate days.	Program: 15 sessions over 3 weeks, on alternate days.
Standardized physiotherapy program included superficial thermal heat, TENS, warm stretching, and core stabilization exercises.	Standardized physiotherapy program included superficial thermal heat, TENS, warm stretching, and core stabilization exercises.
TENS applied for 20 min at 100 Hz (250 µsec pulses) with 4–6 cm electrodes at L4–S1 bilaterally.	Same TENS application protocol used.
Warm-up: 10 min stretching for low back and lower limb muscles.	Warm-up: 10 min stretching for low back and lower limb muscles.
Core muscle activation: low-load, isometric exercises in minimally loaded positions (supine, kneeling, sitting, standing).	Core muscle activation: low-load, isometric exercises in minimally loaded positions (supine, kneeling, sitting, standing).

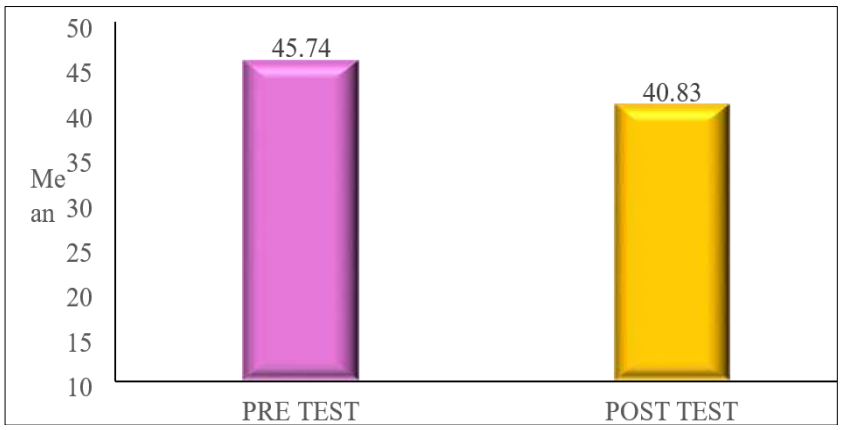
3. Result

Pre-test and post-test values of the study were collected and assessed for variations in improvement and their results were analysed using independent t test and parried t test. The statically analysis of the study showed that there is a significant difference between the groups in VAS scale and goniometer and and SF-36 with a t value of VAS scale and goniometer and SF-36 was 2.074

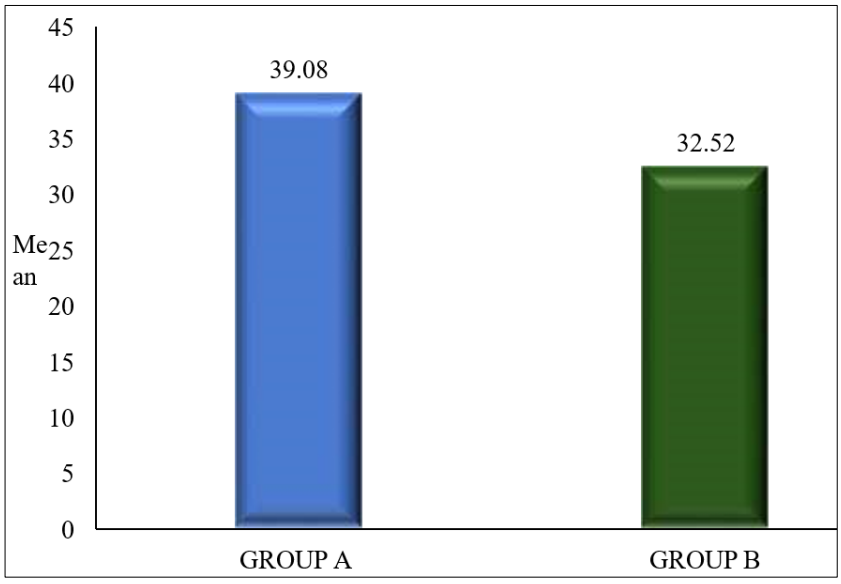
Comparison of results



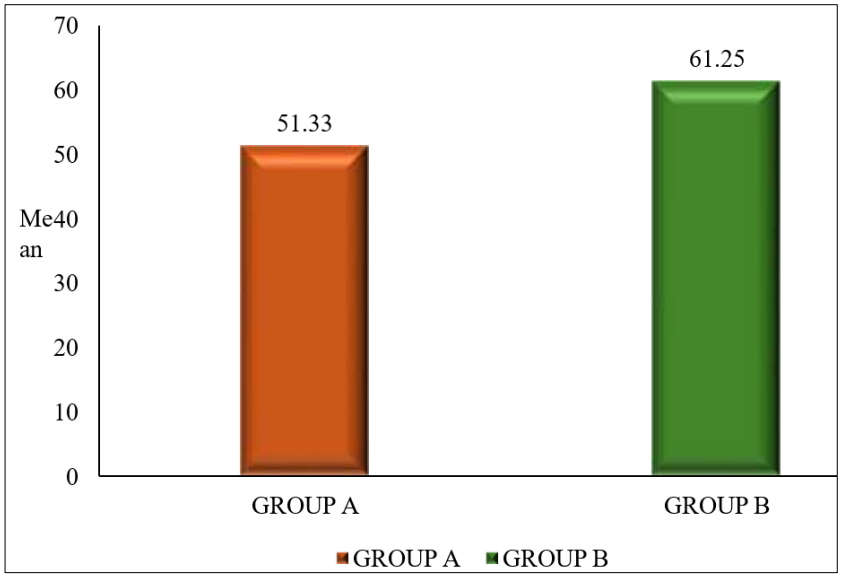
Graph 1: Comparison of vas in group A And B



Graph 2: Comparison of lumbar flexion in group A and B



Graph 3: Comparison of lumbar extension in group A And B



Graph 4: comparison of SF 36 in group A and B

4. Discussion

The present study compared the effectiveness of **connective** tissue massage (CTM) and sham massage with physiotherapy exercise in patients with chronic nonspecific low back pain. A total of 24 participants were divided into two groups.

Findings showed that both groups demonstrated significant reduction in pain, improved lumbar mobility, and enhanced quality of life following intervention. However, Group A (CTM with exercise) showed a greater and statistically significant improvement in all outcome measures compared to Group B.

These results are consistent with previous studies:

- French *et al.* reported that superficial heat/cold significantly reduced low back pain.
- Aure *et al*. demonstrated that manual therapy and exercise therapy improved pain in chronic low back pain patients.
- Almivaara *et al*. highlighted the effectiveness of exercise therapy for nonspecific low back pain.
- Wang *et al*. found that postural control and core stability exercises significantly reduced pain.

In line with these findings, the present study supports the view that specific therapeutic interventions such as connective tissue massage, when combined with physiotherapy exercise, are more effective than non-specific or sham interventions in managing pain, lumbar mobility, and quality of life in chronic nonspecific low back pain patients.

Statistical analysis (paired and independent t-tests) confirmed that Group A showed greater reductions in pain scores, better lumbar flexion and extension mobility, and higher SF-36 quality of life scores compared to Group B.

Thus, CTM combined with physiotherapy exercise can be considered a more effective approach than sham massage with physiotherapy exercise in the rehabilitation of chronic nonspecific low back pain.

5. Conclusion

The study demonstrated that while both groups improved, connective tissue massage combined with physiotherapy exercise was significantly more effective than sham massage with exercise in reducing pain, enhancing lumbar range of motion, and improving quality of life in individuals with chronic nonspecific low back pain. Therefore, the null hypothesis was rejected, confirming that CTM offers superior clinical benefits compared to sham massage when integrated with exercise therapy.

6. Ethical approval and consent to participate

Ethical approval was obtained from the institutional review board of Sri Ramakrishna institute of paramedical sciences. All respondents agreed to participate in the study and informed consent was obtained from all the subjects. The privacy of the participants information was maintained, and there was no disclosure of their names or any information that could identify them.

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