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Effect of Hold Relex Technique in Improving Pain in the Subjects of Subjects of Subocciput Myofacial Trigger Points

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ABSTRACT

Background: Suboccipital myofascial trigger points are a common cause of neck pain, muscle tightness, tenderness, and functional discomfort. Prolonged poor posture, repetitive activities, and muscular strain contribute to the development of trigger points in the suboccipital muscles. Various physiotherapy interventions are used for the management of myofascial trigger points, among which Hold Relax Technique is considered effective in reducing muscle spasm and improving muscle flexibility.

Aim of the Study: To evaluate the effect of Hold Relax Technique in improving pain among subjects with suboccipital myofascial trigger points.

Methodology: An experimental study was conducted on 30 subjects diagnosed with suboccipital myofascial trigger points. Subjects were randomly divided into two groups:

- Group A (Experimental Group): Received Hold Relax Technique along with conventional physiotherapy.
- Group B (Control Group): Received conventional physiotherapy alone.

Each group consisted of 15 subjects. Pain intensity was assessed using the Numerical Pain Rating Scale (NPRS) before and after the intervention. Statistical analysis was performed using paired t-test for within-group comparison and independent t-test for between-group comparison.

Results: The experimental group showed significant reduction in pain intensity, with NPRS scores improving from 8.20 ± 1.15 pre-treatment to 2.73 ± 1.44 post-treatment. The control group also showed improvement from 7.67 ± 1.23 to 5.07 ± 0.80. Paired t-test analysis revealed highly significant improvement in both groups ($p < 0.001$). Independent t-test analysis demonstrated a statistically significant difference between groups in post-test scores, favoring the experimental group ($p < 0.001$).

Conclusion: The study concluded that Hold Relax Technique is effective in reducing pain among subjects with suboccipital myofascial trigger points. The addition of Hold Relax Technique to conventional physiotherapy produced greater improvement compared to conventional physiotherapy alone. Therefore, Hold Relax Technique can be considered an effective therapeutic intervention in the physiotherapy management of suboccipital myofascial trigger points.

Keywords: Hold Relax Technique, Suboccipital Muscles, Myofascial Trigger Points, Neck Pain, NPRS, Physiotherapy, Proprioceptive Neuromuscular Facilitation.

INTRODUCTION

Neck pain is one of the most common musculoskeletal disorders affecting individuals of all age groups and is frequently associated with poor posture, prolonged computer use, psychological stress, and repetitive activities. Among the various causes of neck pain, myofascial trigger points present in the cervical musculature are considered a major contributing factor. Suboccipital muscles are particularly vulnerable to the development of myofascial trigger points because of their important role in maintaining head posture and controlling fine cervical movements.

Myofascial trigger points are hyperirritable spots located within taut bands of skeletal muscle fibers. These trigger points are painful on compression and may produce referred pain, muscle tenderness, restricted range of motion, stiffness, and functional disability. Trigger points in the suboccipital region commonly produce symptoms such as neck pain, cervicogenic headache, occipital discomfort, dizziness, and muscle tightness. Prolonged forward head posture and sustained static activities can increase stress on the suboccipital muscles, leading to muscle fatigue and trigger point formation.

Suboccipital muscles include the rectus capitis posterior major, rectus capitis posterior minor, obliquus capitis superior, and obliquus capitis inferior muscles. These muscles are richly supplied with muscle spindles and are highly involved in postural control and proprioception. Persistent contraction or overuse of these muscles may reduce local blood circulation, resulting in ischemia, accumulation of metabolic waste products, and sensitization of nociceptors, ultimately leading to pain and trigger point development.

Physiotherapy plays a significant role in the management of myofascial trigger points. Various physiotherapeutic interventions such as stretching exercises, manual therapy, soft tissue mobilization, postural correction, heat therapy, dry needling, muscle energy techniques, and proprioceptive neuromuscular facilitation (PNF) techniques are commonly used to reduce pain and improve muscle flexibility.

Hold Relax Technique is one of the commonly used proprioceptive neuromuscular facilitation techniques designed to improve muscle relaxation and flexibility. The technique involves an isometric contraction of the tight muscle followed by relaxation and passive stretching. The therapeutic effect of Hold Relax Technique is believed to occur through autogenic inhibition mediated by the Golgi tendon organs, resulting in reduced muscle spasm and increased muscle extensibility. This technique also helps improve circulation, decrease muscle tension, and reduce pain sensitivity.

Several studies have demonstrated the effectiveness of Hold Relax Technique in reducing pain and improving flexibility in various musculoskeletal conditions. However, limited evidence is available regarding its effectiveness specifically in subjects with suboccipital myofascial trigger points. Since suboccipital muscle tightness and trigger point sensitivity contribute significantly to neck pain and discomfort, it is important to identify effective physiotherapy interventions for managing this condition.

Therefore, the present study was undertaken to investigate the effect of Hold Relax Technique in improving pain among subjects with suboccipital myofascial trigger points. The study aimed to determine whether the addition of Hold Relax Technique to conventional physiotherapy would produce greater reduction in pain compared to conventional treatment alone.

METHODOLOGY

Study Design

The present study was an experimental study conducted to evaluate the effect of Hold Relax Technique in improving pain among subjects with suboccipital myofascial trigger points. The study compared the

effectiveness of Hold Relax Technique with conventional physiotherapy management using pre-test and post-test assessment.

Study Setting

The study was conducted in the Department of Physiotherapy at Rukmani Birla Hospital (RBH CK Birla), Jaipur, where subjects with neck pain and suboccipital myofascial trigger points were assessed and treated.

Sample Size

A total of 30 subjects participated in the study. The participants were randomly divided into two groups:

- **Group A (Experimental Group)** – 15 subjects
- **Group B (Control Group)** – 15 subjects

Sampling Method

Subjects were selected using a convenient sampling method based on the inclusion and exclusion criteria.

Inclusion Criteria

1. Subjects aged between 20–50 years.
2. Both male and female subjects.
3. Subjects diagnosed with suboccipital myofascial trigger points.
4. Subjects complaining of neck pain and tenderness in the suboccipital region.
5. Subjects willing to participate in the study.

Exclusion Criteria

1. Subjects with cervical fractures or instability.
2. Subjects with neurological deficits.
3. Subjects with recent cervical spine surgery.
4. Subjects with inflammatory or systemic disorders.
5. Subjects receiving any other physiotherapy treatment for neck pain during the study period.

Outcome Measure

Numerical Pain Rating Scale (NPRS)

Pain intensity was measured using the Numerical Pain Rating Scale (NPRS). The scale ranges from 0 to 10, where:

- 0 = No pain
- 10 = Worst possible pain

Pre-treatment and post-treatment NPRS scores were recorded for both groups.

Procedure

Group A – Experimental Group

Subjects in Group A received Hold Relax Technique along with conventional physiotherapy treatment.

Hold Relax Technique Procedure

- The subject was positioned comfortably in supine lying.
- The therapist identified the tight suboccipital muscles containing trigger points.
- The muscle was passively stretched to the point of mild discomfort.
- The subject was instructed to perform an isometric contraction of the suboccipital muscles against therapist resistance for approximately 6–10 seconds.
- After relaxation, the therapist passively stretched the muscle further and maintained the stretch for 15–30 seconds.
- The procedure was repeated for 3–5 repetitions in each session.

Conventional Physiotherapy Treatment

- Hot pack application for 10–15 minutes.
- Gentle cervical range of motion exercises.
- Postural correction advice.

Treatment Duration

Treatment was administered for 2 weeks with 5 sessions per week.

Group B – Control Group

Subjects in Group B received only conventional physiotherapy management, which included:

- Hot pack application for 10–15 minutes.
- Gentle cervical range of motion exercises.
- Postural correction advice.

Treatment duration and frequency were similar to Group A.

Data Collection Procedure

1. Subjects fulfilling the inclusion criteria were selected.
2. Written informed consent was obtained from all participants.
3. Baseline assessment of pain was recorded using NPRS.
4. Subjects were randomly allocated into two groups.
5. Interventions were administered according to group allocation.
6. Post-treatment NPRS scores were recorded after completion of the treatment protocol.

Statistical Analysis

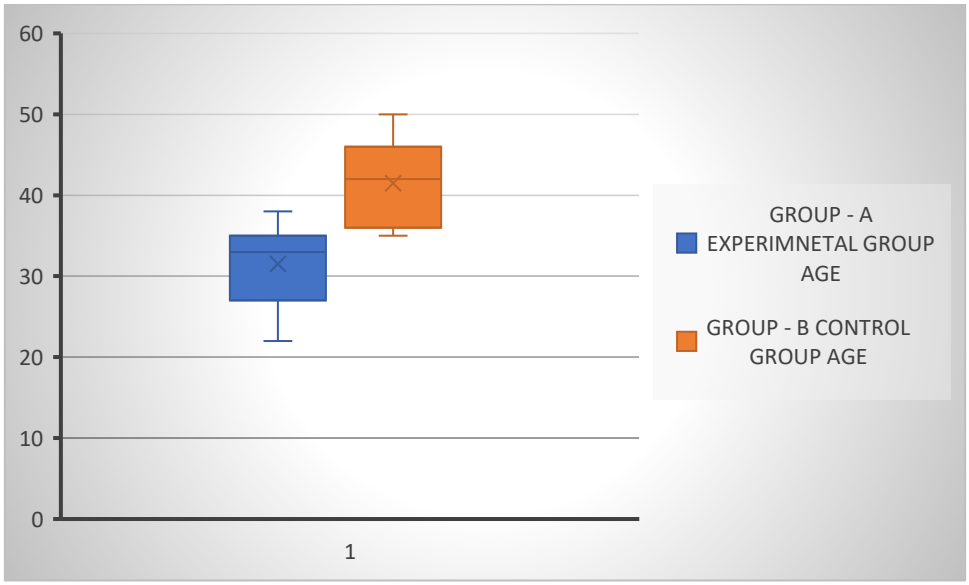
The collected data were analyzed using appropriate statistical methods.

- Mean and standard deviation were calculated for all variables.
- Paired t-test was used to compare pre-test and post-test values within each group.
- Independent t-test was used to compare post-test values between the groups.
- The level of significance was set at $p < 0.05$.

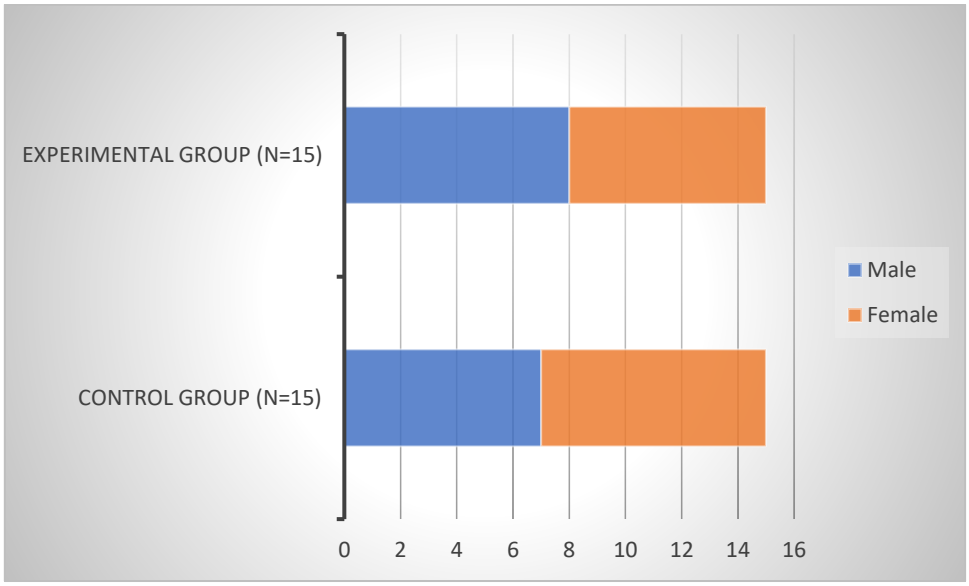
RESULTS

Table 1. Demographic Characteristics of Participants

Variable	Control Group (n=15)	Experimental Group (n=15)
Age (years)	41.47 ± 4.93	31.53 ± 4.93
Male	7	8
Female	8	7



Graph 1 Demographic Characteristics (Age) of Participants

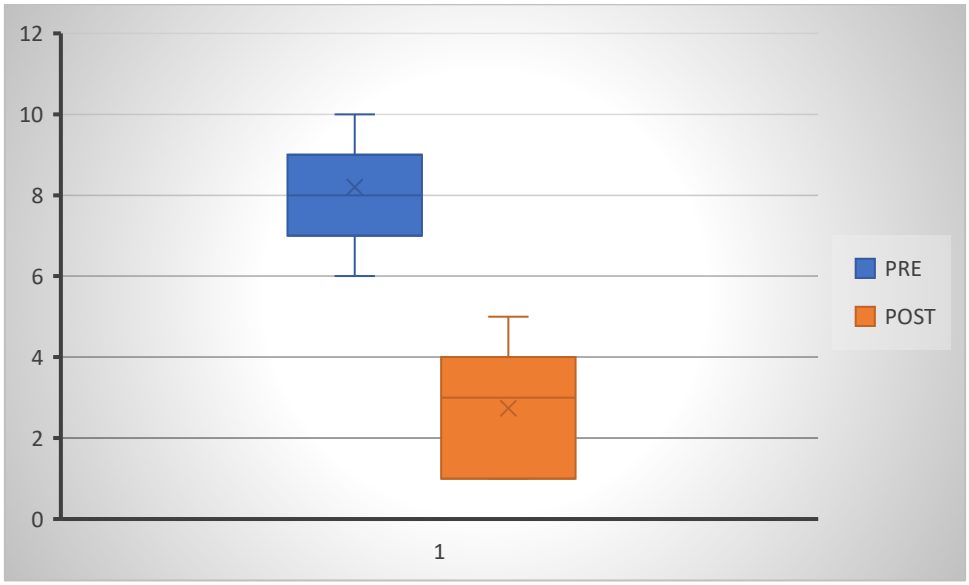


Graph 2 Demographic Characteristics (Gender) of Participants

Table 2. Paired t-test Analysis for Experimental Group (NPRS)

Variable	Pre-test Mean ± SD	Post-test Mean ± SD	Mean Difference	t-value	p-value
NPRS	8.20 ± 1.15	2.73 ± 1.44	5.47	10.25	<0.001

The experimental group demonstrated a highly statistically significant reduction in NPRS scores following intervention ($p < 0.001$).

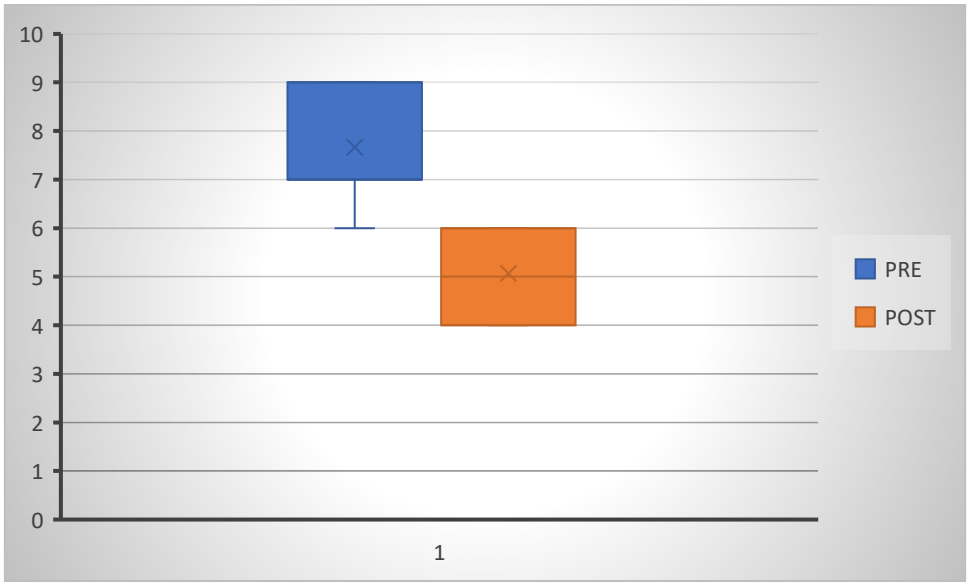


Graph 4 . Paired t-test Analysis for Experimental Group (NPRS)

Table 3. Paired t-test Analysis for Control Group (NPRS)

Variable	Pre-test Mean ± SD	Post-test Mean ± SD	Mean Difference	t-value	p-value
NPRS	7.67 ± 1.23	5.07 ± 0.80	2.60	8.11	<0.001

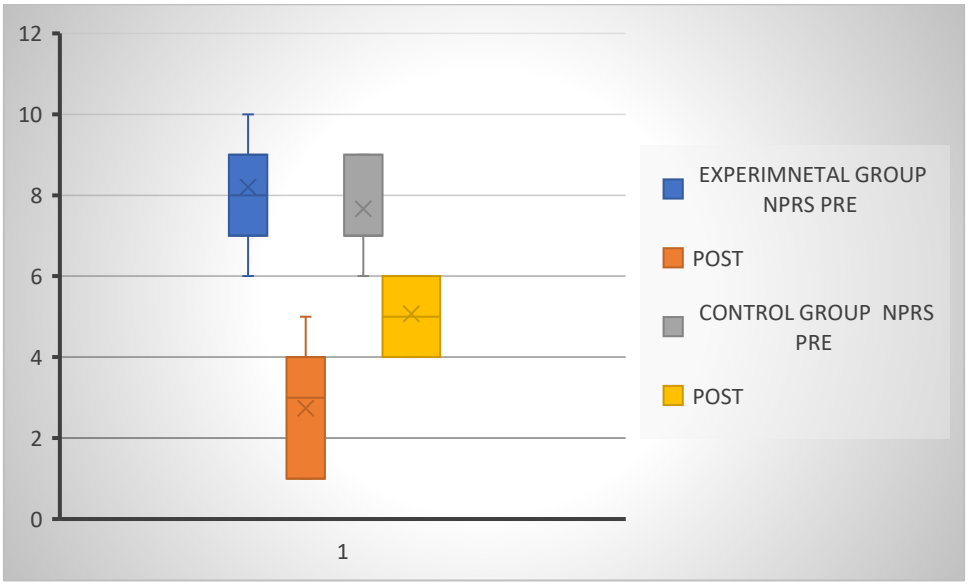
The control group showed a statistically significant reduction in NPRS scores following intervention ($p < 0.001$).



Graph 4. Paired t-test Analysis for Control Group (NPRS)

Table 4. Comparison of Control and Experimental Group NPRS Scores

Variable	Control Group Mean ± SD	Experimental Group Mean ± SD	t-value	p-value
Pre-test NPRS	7.67 ± 1.23	8.20 ± 1.15	-1.23	0.230
Post-test NPRS	5.07 ± 0.80	2.73 ± 1.44	5.49	<0.001



Graph 5. Comparison of Control and Experimental Group NPRS Scores

- The pre-test comparison showed no statistically significant difference between the groups ($p > 0.05$), indicating that both groups were homogeneous at baseline.
- The post-test comparison showed a highly statistically significant difference between the groups ($p < 0.001$), indicating that the experimental group demonstrated greater improvement in NPRS scores compared to the control group.

DISCUSSION

The present study was conducted to evaluate the effect of Hold Relax Technique in improving pain among subjects with suboccipital myofascial trigger points. Pain intensity was measured using the Numerical Pain Rating Scale (NPRS). The findings of the study demonstrated statistically significant improvement in both groups; however, the experimental group receiving Hold Relax Technique along with conventional physiotherapy showed greater reduction in pain compared to the control group receiving conventional treatment alone.

The experimental group showed a marked reduction in NPRS scores from pre-treatment to post-treatment, indicating that Hold Relax Technique is effective in reducing pain associated with suboccipital myofascial trigger points. The control group also demonstrated improvement, which may be attributed to the effects of conventional physiotherapy interventions such as hot pack application, mobility exercises, and postural correction. However, the degree of improvement was comparatively less than that observed in the experimental group.

The significant reduction in pain in the experimental group may be explained by the neurophysiological effects of Hold Relax Technique. This technique is based on the principle of proprioceptive neuromuscular facilitation (PNF), where isometric contraction followed by relaxation leads to autogenic inhibition mediated through the Golgi tendon organs. This mechanism helps in reducing muscle spasm, improving muscle extensibility, and decreasing pain sensitivity in the affected muscles. Relaxation of the suboccipital muscles may reduce local ischemia and improve blood circulation, thereby decreasing trigger point irritability and pain.

Suboccipital muscles play an important role in maintaining head posture and cervical stability. Prolonged poor posture, stress, and repetitive strain may lead to the development of myofascial trigger points in this

region, causing neck pain, headache, and restricted movement. Hold Relax Technique may help restore normal muscle length and reduce abnormal muscle tension, thereby improving functional comfort.

The findings of the present study are consistent with the study conducted by Travell and Simons, who reported that stretching and relaxation techniques are effective in reducing myofascial trigger point pain and muscle tightness. Their work emphasized the importance of muscle relaxation in the management of trigger points.

The results are also supported by the study of Lewit, who demonstrated that post-isometric relaxation techniques significantly reduce muscle tenderness and improve flexibility in patients with muscular pain syndromes. The author suggested that muscle energy techniques can effectively normalize muscle tone and relieve pain.

A study conducted by Fryer and Hodgson reported that Hold Relax and muscle energy techniques are effective in decreasing pain and improving cervical range of motion in patients with neck dysfunction. The authors attributed the improvement to reflex muscle relaxation and decreased nociceptive input.

Similarly, Chaitow described that PNF stretching techniques produce relaxation of hypertonic muscles and improve soft tissue mobility through neuromuscular mechanisms. This supports the pain reduction observed in the present study.

The findings are also in agreement with the work of Fernández-de-Las-Peñas, who highlighted the role of manual therapy and stretching techniques in reducing trigger point sensitivity and improving cervical pain conditions.

Another study by Bandy and Irion concluded that stretching interventions improve muscle flexibility and reduce musculoskeletal discomfort, supporting the effectiveness of Hold Relax Technique in reducing pain.

The significant post-treatment difference between the experimental and control groups observed in the present study indicates that Hold Relax Technique provides additional therapeutic benefit when combined with conventional physiotherapy. The greater mean reduction in NPRS scores in the experimental group confirms the superiority of this intervention in managing suboccipital myofascial trigger point pain.

Overall, the findings of the present study suggest that Hold Relax Technique is an effective and clinically useful intervention for reducing pain in subjects with suboccipital myofascial trigger points. The technique can be safely incorporated into physiotherapy rehabilitation programs for patients with neck pain and myofascial dysfunction.

CONCLUSION

The present study concluded that Hold Relax Technique is effective in improving pain among subjects with suboccipital myofascial trigger points. Both the control group and experimental group demonstrated improvement following treatment; however, the experimental group receiving Hold Relax Technique along with conventional physiotherapy showed significantly greater reduction in pain intensity compared to the control group receiving conventional physiotherapy alone.

The findings of the study indicate that Hold Relax Technique helps in reducing muscle tightness, relieving trigger point sensitivity, promoting muscle relaxation, and improving functional comfort in subjects with suboccipital myofascial pain. The neurophysiological effects of post-isometric relaxation and autogenic inhibition may contribute to the reduction of pain and muscle spasm.

Based on the statistical analysis, the post-treatment improvement observed in the experimental group was highly significant, suggesting that Hold Relax Technique can be considered an effective therapeutic intervention in the physiotherapy management of suboccipital myofascial trigger points.
Therefore, the study supports the incorporation of Hold Relax Technique as a beneficial and clinically effective approach for reducing pain in individuals with suboccipital myofascial trigger points.

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