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Effectiveness of Tyler Twist Technique, Inhibition – Ischemic Compression Technique and Conventional Therapy in managing Lateral Epicondylitis with Non-Specific neck pain

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Abstract: **Background: Lateral epicondylitis, commonly known as tennis elbow, is a frequently occurring musculoskeletal disorder characterized by elbow pain and reduced functional capacity. It is often accompanied by non-specific neck pain, likely due to the biomechanical relationship between the cervical spine and the upper limb.**

Objective: To determine the effectiveness of the Tyler Twist technique, inhibition–ischemic compression, and conventional therapy in alleviating pain and enhancing functional outcomes in individuals with lateral epicondylitis associated with non-specific neck pain.

Methodology: A quasi-experimental study using a one-group pre-test–post-test design was carried out on individuals aged 30–40 years diagnosed with lateral epicondylitis and non-specific neck pain. A total of 36 participants underwent interventions including the Tyler Twist technique, inhibition–ischemic compression technique, and conventional physiotherapy. Outcome measures included the Numerical Pain Rating Scale (NPRS), Patient-Rated Tennis Elbow Evaluation (PRTEE), Neck Disability Index (NDI), grip strength, and Myofascial Diagnostic Scale (MFDS). Data were analysed using descriptive statistics.

Results: The experimental group exhibited significant improvements in pain levels, muscle strength, and functional performance following the intervention.

Conclusion: The combined use of the Tyler Twist technique, inhibition–ischemic compression, and conventional therapy is effective in the management of lateral epicondylitis associated with non-specific neck pain.

Keywords: **Lateral epicondylitis, non-specific neck pain, Neck Disability Index, Numerical Pain Rating Scale, Patient-Rated Tennis Elbow Evaluation, Myofascial Diagnostic Scale.**

1. INTRODUCTION

The elbow joint is a complex anatomical structure that serves as an essential mechanical link between the shoulder, wrist, and hand within the upper limb, any dysfunction or impairment of the elbow joint can significantly affect the ability to perform daily activities.[1]

Lateral epicondylitis (LE), commonly referred to as "tennis elbow," is one of the most common repetitive strain injuries affecting the upper extremity.[2] It results from repetitive overloading of the forearm extensor muscles, particularly involving the extensor carpi radialis brevis (ECRB).[3] Other wrist extensor muscles, including the brachioradialis, extensor carpi radialis, supinator, extensor digitorum, and extensor carpi ulnaris, are also frequently reported as painful in individuals with this condition.[4]

Musculoskeletal pain seldom occurs in isolation within a single joint or region; rather, it often presents across interconnected anatomical areas due to regional interdependence.[5] Clinically, it is commonly observed that individuals with lateral epicondylitis also report non-specific neck pain (NSNP) , the coexistence of these conditions presents both diagnostic and therapeutic challenges, influenced by biomechanical connections, neurophysiological mechanisms, and shared sensorimotor adaptations.[6]

Pain originating from nonspecific cervical spine conditions is often referred to the lateral aspect of the elbow.[7] Non-specific neck pain (NSNP) is defined as pain located in the lateral region of the neck, extending from the superior nuchal line to the scapular spine and from the superior border of the clavicle to the suprasternal notch.[8] This condition is frequently associated with muscle tenderness and discomfort, particularly in the trapezius region.[9]

Therefore, adopting a comprehensive rehabilitation strategy that targets both the affected tendon and the associated proximal regions may result in improved pain relief, enhanced functional outcomes, and more effective pain modulation.[10]

2. METHODOLOGY

Study Design:

The study followed a quasi-experimental design using a one-group pre-test and post-test approach.

Study Setting:

The research was conducted in a clinical outpatient setting.

Study Population:

Participants were selected from the Amritsar region of India based on predefined inclusion criteria for lateral epicondylitis and non-specific neck pain.

Sample Size:

A total of 36 participants aged between 30 and 40 years, diagnosed with lateral epicondylitis and non-specific neck pain, were included. The sample size was calculated using G*Power software version 3.1.9.4.

Inclusion Criteria:

- Aged 30–40 years Male/ Female
- Presence of pain and tenderness around the lateral epicondyle for at least 1.5 months
- Neck pain and discomfort persisting for 1.5 months
- Presence of trigger points in the trapezius muscle
- Positive test for lateral epicondylitis

Exclusion Criteria:

- History of shoulder or elbow injury within the previous year
- Receipt of injection therapy within the last three months
- Diagnosed cervical conditions such as cervical spondylosis, spondylolisthesis, or other specific neck pathologies

Variables:

Dependent Variables:

- NPRS
- Grip strength (measured using a dynamometer)
- Patient-Rated Tennis Elbow Evaluation (PRTEE)
- Neck Disability Index (NDI)
- Myofascial Diagnostic Scale (MFDS)

Demographic Variables:

- Age
- Gender
- Height
- Weight
- BMI

Independent Variables:

- Tyler Twist technique
- Inhibition–ischemic compression technique
- Conventional therapy (ultrasound therapy)

Instruments and Tools:

- Weighing scale
- Measuring tape
- Hand dynamometer
- Flexbar (Yellow and Red)
- PRTEE scale
- Neck Disability Index (NDI)
- Numerical Pain Rating Scale (NPRS)
- Myofascial Diagnostic Scale (MFDS)

Outcome Measures:

- Grip strength
- Pain and functional limitations associated with lateral epicondylitis
- Level of neck disability
- Pain intensity
- Severity and presence of myofascial trigger points

Procedure:
Participants underwent interventions that included the Tyler Twist technique, inhibition–ischemic compression targeting trapezius trigger points, and conventional ultrasound therapy (UST).

Protocol:
The treatment program consisted of four sessions per week, with each session lasting 20–30 minutes, over a period of six weeks.

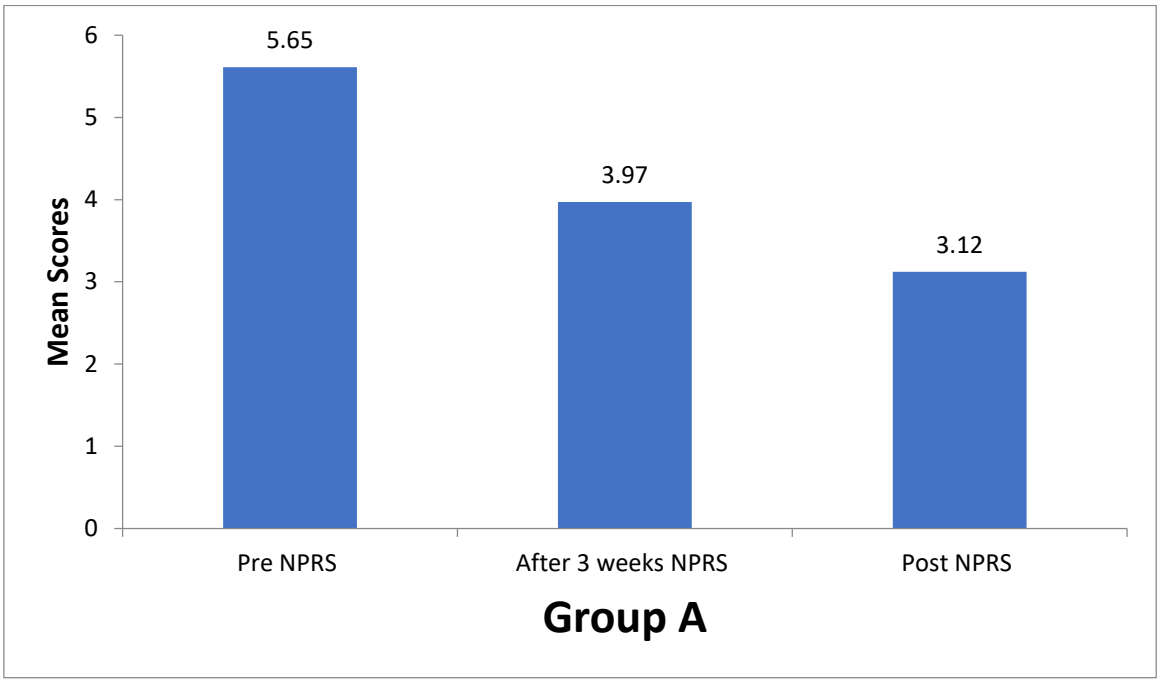
3. RESULTS AND DISCUSSION

Within-Group Comparison of Outcome Measures in Group A (Paired t-test)

Table 1. NPRS (Numeric Pain Rating Scale)

Time Point	Mean ± SD	T- value	P-value
1. Pre-test readings	5.65 ± 0.69		
2. Post readings 1(After 3 weeks)	3.97 ± 0.52	15.317	< 0.001
3. Post readings 2(After 6 weeks)	3.12 ± 0.60	21.965	

Table 1 shows The mean NPRS score decreased from 5.65 ± 0.69 at baseline to 3.97 ± 0.52 at 3 weeks and further to 3.12 ± 0.60 post-intervention. The p-value (<0.001) indicates that this reduction in pain intensity was statistically highly significant, suggesting that the intervention was effective in reducing pain among the participants.

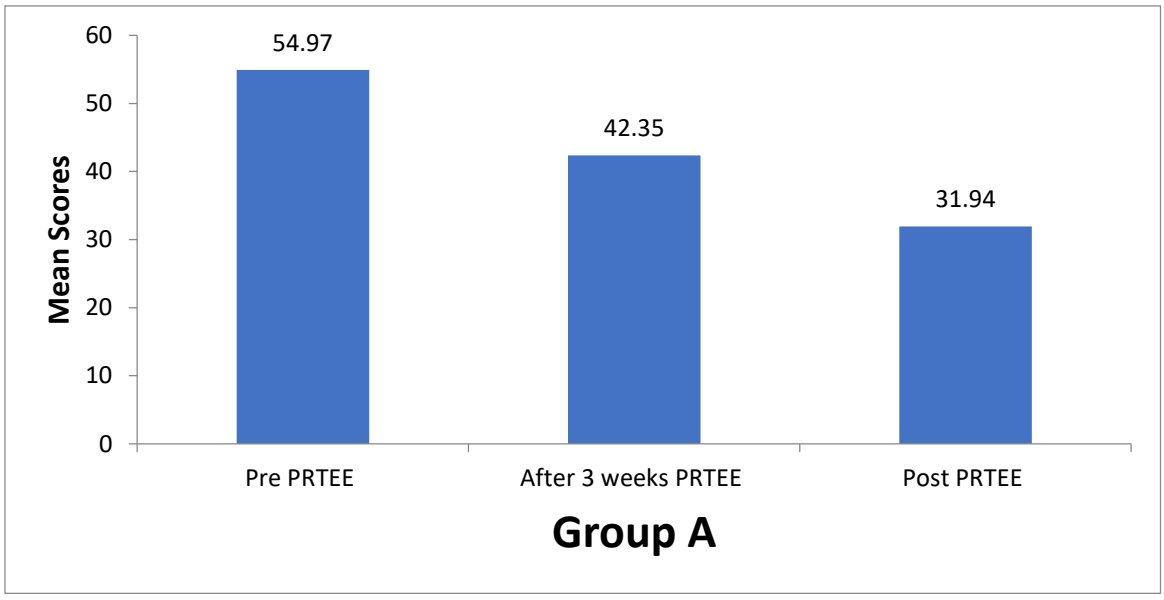


Graph 1 Graphical representation of within group comparison of NPRS score

Table 2. PRTEE (Patient-Rated Tennis Elbow Evaluation)

Time Point	Mean ± SD	T-value	P-value
1. Pre-test readings	54.97 ± 6.69		
2. Post readings 1(After 3 weeks)	42.35 ± 6.34	13.169	< 0.001
3. Post readings 2(After 6 weeks)	31.94 ± 6.08	18.306	

Table 2 shows The mean PRTEE score decreased from 54.97 ± 6.69 at baseline to 42.35 ± 6.34 at 3 weeks and further to 31.94 ± 6.08 post-intervention. The statistically significant p-value (<0.001) indicates a significant reduction in pain and functional disability related to tennis elbow, reflecting improvement in elbow function.

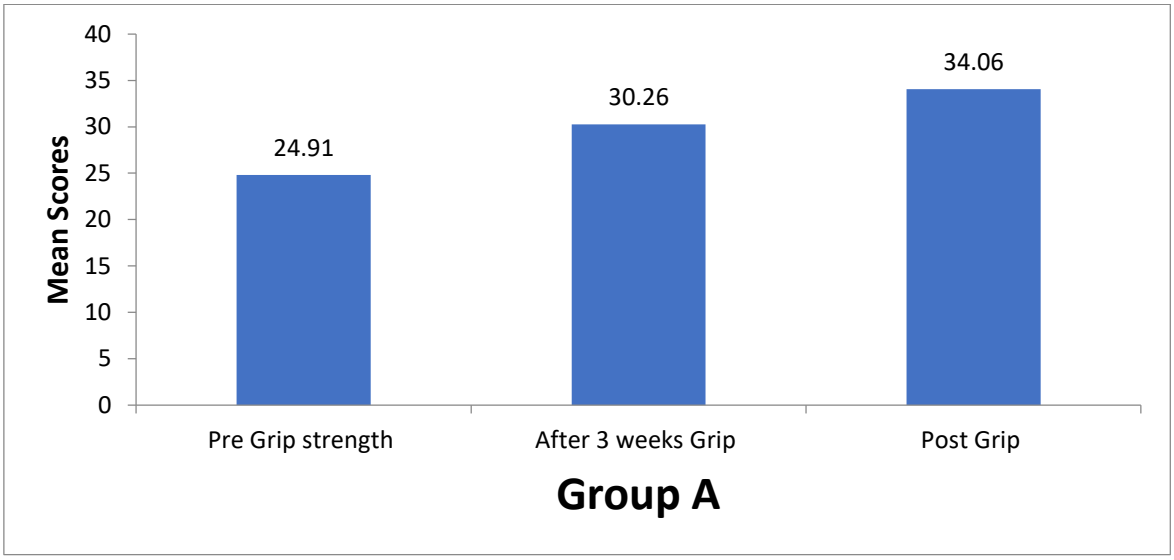


Graph 2 Graphical representation of within group comparison of PRTEE score

Table 3. Grip Strength

Time Point	Mean ± SD	T-value	P-value
1. Pre-test readings	24.91 ± 5.11		
2. Post readings 1(After 3 weeks)	30.26 ± 5.41	-9.727	< 0.001
3. Post readings 2(After 6 weeks)	34.06 ± 6.15	-13.009	

Table 3 shows The mean grip strength increased from 24.91 ± 5.11 at baseline to 30.26 ± 5.41 at 3 weeks and further to 34.06 ± 6.15 post-intervention. The p-value (<0.001) indicates a highly significant improvement in grip strength, suggesting enhanced forearm muscle strength and functional capacity following the intervention .

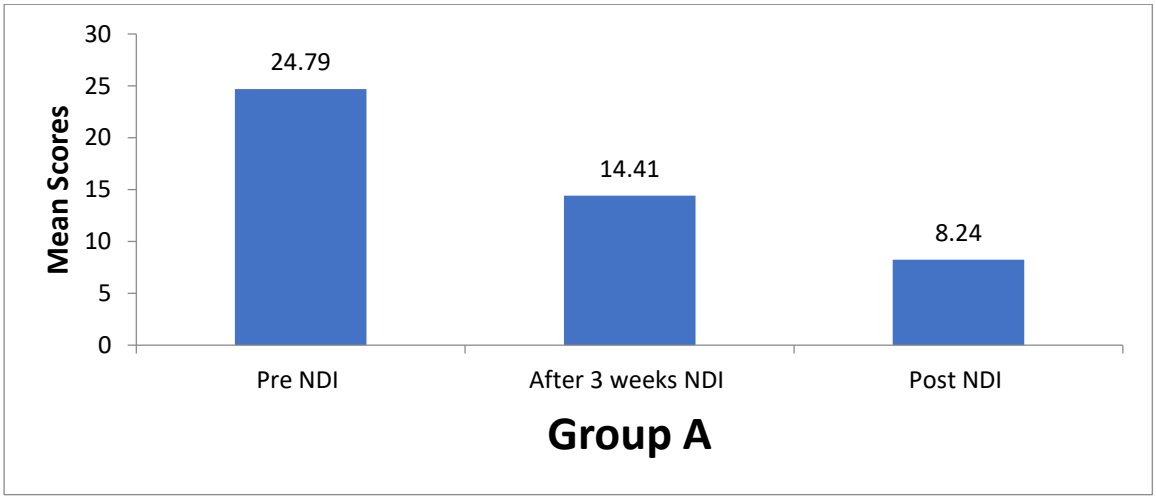


Graph 3 Graphical representation of within group comparison of Grip Strength score

Table 4. NDI (Neck Disability Index)

Time Point	Mean ± SD	T-value	P-value
1. Pre-test readings	24.79 ± 2.65		
2. Post readings 1(After 3 weeks)	14.41 ± 3.53	21.484	< 0.001
3. Post readings 2(After 6 weeks)	8.24 ± 2.94	29.750	

Table 4 shows The mean NDI score reduced from 24.79 ± 2.65 at baseline to 14.41 ± 3.53 at 3 weeks and further to 8.24 ± 2.94 post-intervention. The p-value (<0.001) indicates a statistically significant reduction in neck disability, demonstrating improved neck function and ability to perform daily activities

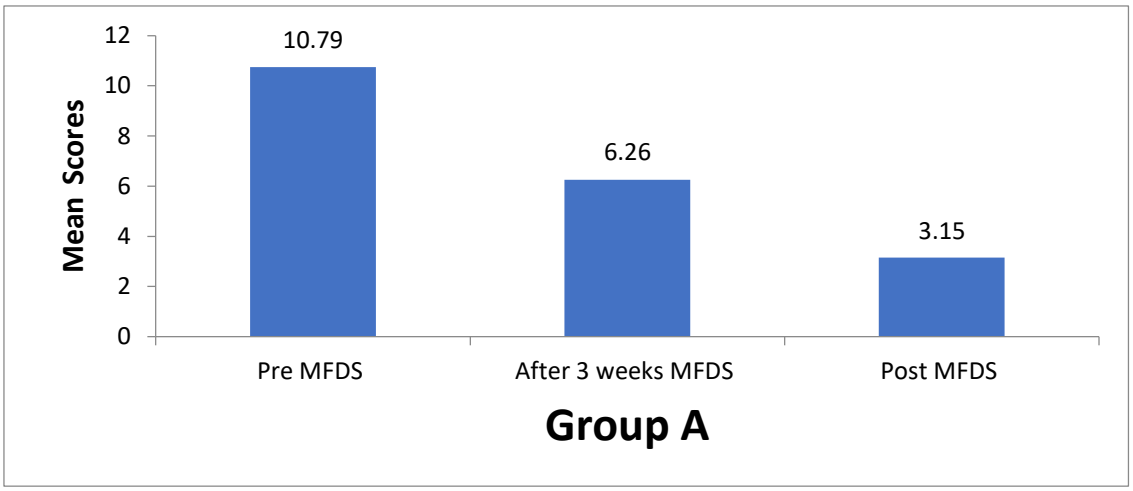


Graph 4 Graphical representation of within group comparison of NDI core

Table 5. MFDS (Myofascial Diagnostic Scale)

Time Point	Mean ± SD	T-value	P-value
1. Pre-test readings	10.79 ± 0.81		
2. Post readings 1(After 3 weeks)	6.26 ± 1.36	19.510	< 0.001
3. Post readings 2 (After 6 weeks)	3.15 ± 1.06	35.954	

Table 5 shows the mean MFDS score decreased from 10.79 ± 0.81 at baseline to 6.26 ± 1.36 at 3 weeks and further to 3.15 ± 1.06 post-intervention. The statistically significant p-value (<0.001) indicates a marked reduction in myofascial dysfunction and trigger point sensitivity following the intervention.



Graph 5 Graphical representation of within group comparison of MFDS score

4. DISCUSSION

The present study was undertaken to evaluate the effectiveness of a physiotherapy-based intervention in alleviating pain intensity and improving functional outcomes in individuals with lateral epicondylitis accompanied by non-specific neck pain. The treatment protocol included Tyler Twist eccentric exercises, the inhibition–ischemic compression technique, and conventional physiotherapy. This integrated approach was designed to address both the localized pathology at the lateral elbow and the proximal biomechanical impairments that may contribute to ongoing symptoms.

The results of the study indicated notable improvements in pain intensity, grip strength, functional performance, neck-related disability, and trigger point sensitivity following the intervention period. These positive outcomes may be largely attributed to the incorporation of eccentric loading through the Tyler Twist technique. Eccentric exercise is well established as an effective treatment for tendinopathies, as it facilitates tendon remodelling by enhancing collagen synthesis, optimizing fibre alignment, and increasing tensile strength.[11] Tyler et al. (2010) reported that eccentric loading using a flexible bar significantly decreases pain and improves functional outcomes in individuals with chronic lateral epicondylitis, potentially due to enhanced neuromuscular control and reduced tendon neovascularization.

5. CONCLUSION

Tyler Twist Technique , Inhibition – Ischemic Compression Technique and Conventional Therapy is effective in managing lateral epicondylitis associated with non-specific neck pain.

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