



Effects of Trigger Point Dry needling Brachioradialis on Type Writing Speed and Pain

Mythili Kasthuriengan*

Department of Physiotherapt, Recoup Neuromusculoskeletal Rehabilitation Centre, India

***Corresponding Author:** Mythili Kasthuriengan, Department of Physiotherapt, Recoup Neuromusculoskeletal Rehabilitation Centre, India.

DOI: 10.31080/ASOR.2024.07.0882

Received: November 03, 2023

Published: December 04, 2023

© All rights are reserved by **Mythili Kasthuriengan**.

Abstract

Introduction: Human hand is commonly known to achieve its predominance over that of other animals, by possessing an opposable thumb. Type writing is an essential tool required by students and many professionals in day to day life. It is a complex process which involves close coordination between musculoskeletal and nervous system.

Aims and Objectives: Analyze the effect of trigger release via dry needling over wrist extensors on improving type writing speed.

Methodology: It was a quasi-experimental study conducted on 20 subjects work on computer based job in Innovations Group, Dubai. Time duration for study is four weeks. Totally four sessions as one session for week. Type writing speed and NPRS used to analyze the results.

Result: The results of the type writing speed analysis of the study population shows at the beginning the overall mean type writing speed was 25 words per minute. After 2 weeks of four sessions it increased to 32 words per minute and remarkable relief in pain.

Keywords: Trigger Point; Dry Needling; Typewriting

Introduction

Nowadays type writing is an important tool required by students. It is a complex process which involves close coordination between musculoskeletal and nervous system. In the good old days of mechanical type writer, typing used to be a skill possessed by very few. But with computers becoming accessible for masses, typing has become an everyday activity. While pressing keys to input text is simple, doing it accurately and at fast speeds without looking at the keyboard is what is necessary today [1].

Dry needling is a skilled intervention using a thin filliform needle to penetrate the skin and stimulate underlying myofascial trigger points, muscular and connective tissues for the management of neuro-musculoskeletal pain and movement impairments. Dry needling is used to treat dysfunctions in skeletal muscle, fascia, connective tissue and diminish persistent peripheral nociceptive input to reduce impairments of body structure and function and to improve activity and participation [3].

Effects of dry needling

- **Chemical effect:** Elicitation of local twitch response lead to reduction in various chemicals such as substance P, calcitonin gene related peptide, bradykinin etc. thus reduces pain and local tenderness.
- **Mechanical effect:** Disruption of trigger point contraction knot and restore normal ROM and muscle activation pattern
- **Neural effect:** Stimulates A delta fiber and may activate opioid mediated pain suppression. If indicated it produces immediate results of reduced pain and increased ROM [4].

Brachioradialis is a superficial forearm muscle that originates from lateral supracondylar ridge of humerus and inserts in radial styloid process. While its primary function is elbow flexion and also depending on the position of hand during flexion, it can move the hand to neutral [5].

A recent study by Michael R Boland in which they used EMG to analyse brachioradialis muscle during elbow flexion with different hand positions. The results indicates regardless of the position of

hand greatest EMG activity from brachioradialis muscle happens in all elbow flexion activities. When comes to the rotational activity of forearm more EMG activity was marked on pronation rather than supination [6].

Study by Tim Kleiber et al, states that the increased activity of brachioradialis in forearm pronation is a compensation for mechanically disadvantaged biceps brachii since its tendon wrapped around radial tuberosity in forearm pronation [7].

Aim

Analyze the effect of dry needling on brachioradialis muscle over type writing speed and pain

Understanding the effect of myofascial trigger point and tightness of brachioradialis muscle on hand functions.

Hypothesis

Null hypothesis

There is no significant improvement in type writing speed after giving trigger point dry needling.

Alternate hypothesis

There is a significant improvement in typewriting speed after giving trigger point dry needling.

Materials

Acupuncture needles of 2.5cm to 4 cm in size

- Cotton
- Couch
- Computer with external keyboard
- Stopwatch

Methodology

It is a quasi-experimental study. Done on 20 subjects from Innovations group who fits the inclusion criteria out of 39 volunteers. Due to workplace restrictions Study duration was reduced to four weeks.

Typewriting speed test and numerical pain rating scale is used to collect pre and post study data.

Inclusion criteria

All age and gender

- Who spend more than 6 hours a day using computer for 6 days a week.
- Who has more than 5 pain in numerical pain rating scale?
- Patients whose pain level increases towards evening.
- Patients with brachioradialis myofascial trigger point

Exclusion criteria

Needle phobia

- Abnormal bleeding tendencies
- Compromised immune system.

Procedure

A group of 20 subjects were taken into the study according to random sampling technique. Instructions were given to the persons about the purpose of the study. Subjects are requested to attend all treatment session for four weeks.

Intervention of treatment period starts with initial assessment with speed test and NPRS to determine the rate of speed of type writing and pain during and after typing. This initial assessment is done on last work day of the week (Saturday) evening when pain level was high according to the subjects.

Then the session starts up with following techniques, initially the technique, effects and possible side effects were explained to the patients. Upon receiving their consent the patient is asked to lie down supine. Treatment starts with sanitizing the forearm using an alcohol wipe. Then assessing the muscle texture. Once the trigger point on brachioradialis muscle is identified, we used either 2.5cm or 4 cm acupressure needle based on requirement over the myofascial trigger point. Which immediately followed by stretching and cryotherapy.

On second week strengthening exercises for wrist extensors were taught to the patients flowed by a needling session on third week. During final session at fourth week the final assessment was done and ideal work posture and importance of micro and macro breaks during works have been taught to the patients. Final data were collected and analyzed.

Data presentation and analysis

Pre and post session Data for both speed test and NPRS For the pre and post test study, paired ‘t’ test was used for each parameter in an intra group analysis to find out the significance of improvement achieved through intervention.

Formula for paired t-test,

$$SD = \sqrt{\frac{\sum(d-\bar{d})^2}{n-1}}$$
$$t = \frac{\bar{d}\sqrt{n}}{sd}$$

d = Difference between the pretest versus post test

\bar{d} = Mean difference

n = Total number of subjects

Results and Discussion

The result showed statistically significant changes in the outcome measures used, such as speed test, NPRS

- The pre and post test values of speed test.
- The mean difference value is 4.5.
- The standard deviation value is 1.72.
- The paired 't' test value is 11.51.
- The paired 't' test value is more than table value 2.09 and thus denotes the significance.
- The pre and post test values of NPRS
- The mean difference value is 4.
- The standard deviation value is 0.597.
- The paired 't' test value is 25.94.

The paired 't' test value is more than table value 2.09 and thus denotes the significance.

The paired 't' test values have shows that dry needling followed by stretching and strengthening exercise is more effective in reducing pain during and after typing and also shows improvement in the type writing speed

Thus alternate hypothesis is proved.

7. Kleiber T., *et al.* "Muscular coordination of biceps brachii and brachioradialis in elbow flexion with respect to hand position". *Frontiers in Physiology* 6 (2015): 215.

Level	Net WPM*
Slow	0-25
Average	26-45
Fluent	46-60
Fast	61-80
Professional	80+

Table 1: Grading of type writing speed
WPM = words per minute [2].

Bibliography

1. "Worlds First Typist" Winconsin Historical Society (2003).

2. Brown CM. "Human computer interface design guidelines". Norwood, NJ: Ablex Publishing (1998).

3. Baldry P. "Superficial dry needling at myofascial trigger point sites". *Journal of Musculoskeletal Pain* 3 (1995): 117-126.

4. César Fernández-de-las-Peñas Jan Dommerholt. "Basic concepts of myofascial trigger points (TrPs)".

5. Brachio radialis anatomy: Origin, insertion, Action". The well digest (2004).

6. Boland MR., *et al.* "The function of brachioradialis". *Journal of Hand Surgery (American Volume)* 33.10 (2008):1853-1859.