

“Immediate Effect of Dry Needling Vs Percussor in the Treatment of Trigger Point in Trapezius Muscle”

Received: 24 October 2022, **Revised:** 23 November 2022, **Accepted:** 27 December 2022

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Keywords: Dry needling, percussor therapy, trigger point, trapezius muscle

Abstract

Objectives: 1) To investigate the immediate impact of dry needling on pain at the location of the trapezius muscle trigger point. 2) To examine the immediate impact of the Percussor on pain at the location of the trapezius muscle's trigger point. 3) To contrast the immediate effects of Percussor and Dry Needling on pain at the location of the trapezius muscle's trigger point.

Methods: Using a chit approach and simple random sample, patients with myofascial trigger points in the trapezius muscle were divided into two groups, A and B. Twenty patients in GROUP A received dry needling treatments, and twenty patients in GROUP B received percussor treatments. The individuals were evaluated before and after treatment in ultrasonography, where measurements of the active trigger point's size and muscle width were taken. Both groups got therapy for 10 minutes. Prior to treatment, patients received a vitamin C tablet (Celin 500mg). Both the Pressure Algometer and the NPRS were used to evaluate pain.

Result: In both groups, the local effects of the needling caused the size of the trigger point, which showed up as a hypochoic area on Ultra Sonography, and muscle width to grow right away after treatment. Clinically, individuals in the Percussor Group reported feeling heavy right after treatment, but those in the Dry Needling Group reported feeling better overall. Pain immediately diminishes, as indicated by the pressure algometer.

Conclusion: Both dry needling and percussor are effective at reducing pain, according to statistics, but percussor performs worse clinically in terms of pain depletion and increasing functional independence.

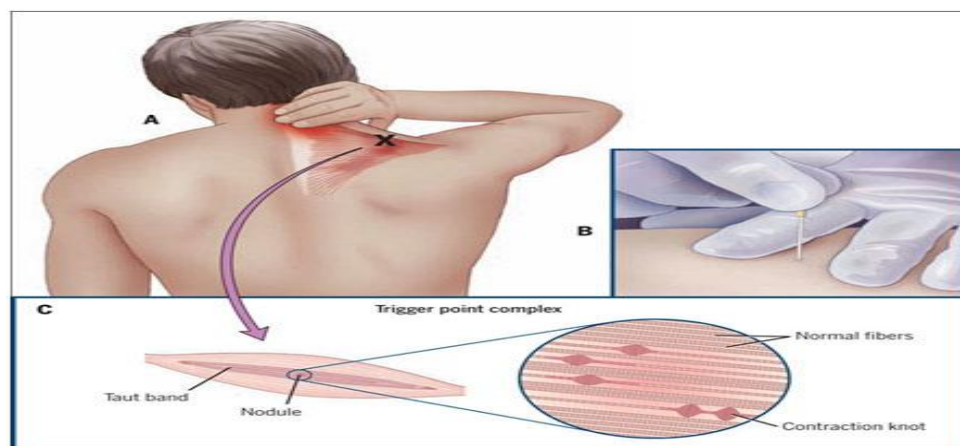
1. Introduction

Pain syndrome of myofascial is perceived as sensory, motor and involuntary symptoms. Once compressed, associate in nursing MTrP might bring about to characteristics hurting, tenderness, motor dysfunction and

involuntary development. It's going to decrease muscle flexibility, manufacture muscle weakness and deform interception. According to pathophysiology, new information about the neurophysiology of MTrP has been flourishing rapidly.

Controversialist of MTrP is the need for efficient research investigations¹. Peripheral nociception and central sensitization are two recent notions of chronic Myofascial pain which interplay amongst each other. Simons had made the hypothesis that prolonged depolarization of post junction membrane and contracture, short sarcomere is the result

of increased Ach release. Thus, extremely constricted sarcomere of motor endplate is known as “Contraction knot”. Chronic sustained sarcomere shortening can lead to increase local energy intake, decrease local circulation of which gives combines effect of local ischemia and hypoxia.²



Dry Needling: For the management of neuro-musculoskeletal pain and mobility limitations, dry needling is a skilful intervention that involves penetrating the skin with a small filiform needle to stimulate the underlying myofascial trigger points (MTrPs), muscle, and connective tissues.³

Percussor: Using a powerful, electro-mechanical tool for soft tissue manipulation, such as the GK-3 Percussor, has an advantage in trigger point therapy because it relieves tension or muscular contraction in the hypersensitive area that, when triggered, can cause pain elsewhere in the body.⁴

Myofascial pain brought on by myofascial trigger points is the most frequent cause of musculoskeletal discomfort (MTrPs). The trapezius muscle is particularly prone to overuse because it is intended to be a postural muscle. Active trigger sites have a high

symptom burden and have a detrimental effect on function. Dry needling is a relatively recent trigger point treatment method. According to the results of the many studies, percussor therapy reduces pain and raises the pain threshold. There doesn't appear to be any data comparing the effectiveness of dry needling and percussor in the trapezius MTrPs.⁵ In order to determine which treatment is more effective, this literature compares their respective efficacies.

2. Method

For this investigation, individuals were chosen after receiving institutional ethical approval. The study included 40 people between the age of 20-40 yrs and was randomly assigned into two groups of 20 in each Group. Group B received percussor

therapy while Group A received dry needling therapy. The Numerical Pain Rating Scale, Pressure Algometer, and Ultrasonography were all used to assess each subject's level of pain (NPRS). Pre-treatment, Day 1 and immediately post-treatment outcome markers were evaluated. The patients received vitamin C pills to promote faster healing.

Inclusion Criteria:

- Both genders
- Age 18 to 40 years
- Presence of unilateral Trapezius myofascial active trigger points

Exclusion Criteria:

- Patient with needle phobia
- unwilling patient
- Patient with anticoagulant therapy or with thrombocytopenia.

- limb with lymphedema.
- Abnormal bleeding tendency.
- Compromised immune therapy.
- Type 1 and Type 2 Diabetes.
- Epilepsy.
- Vascular disease.
- any skin Infection.
- Pregnancy.

Interventions included following techniques:

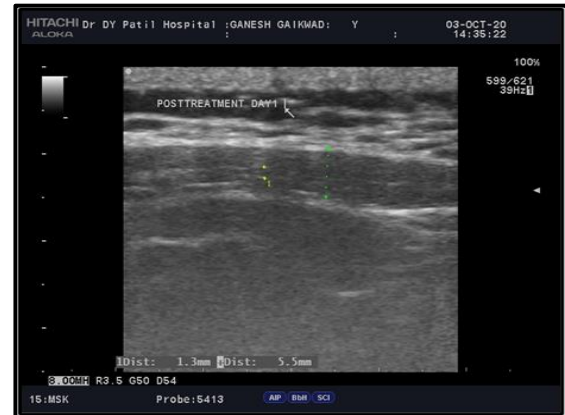
1. **Dry Needling (Group A):** In this Group, Patient treated with Dry Needling therapy. Patient was in prone lying position with both the arm abducted and hand resting over the hand to relax the muscle that enables the easy palpation of the muscle. The needle of 40-50 mm was inserted.



Fig: Patient Treated with Dry Needling Therapy



Pre USG Hypoechoic area- 1.2mm



Post USG Hypoechoic area- 1.3mm

2. **Percussor Therapy (Group B):** Patient was treated with Percussor therapy. Patient was in sitting position and head rested over the hand. In this study, Patients were treated with Percussor therapy. The trigger point in

Trapezius muscle was marked. Treatment was applied to the trigger point in Trapezius muscle with a frequency of 50 Hz lasted for 10 mins of duration.



Figure: Patient treated with Percussor Therapy

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Pre USG Hypochoic area- 4.00mm



Post USG Hypochoic area- 4.2mm

Tables and Graphs

Table 1: Distribution of Age

<u>Age in Years</u>	<u>Dry Needling Group</u>	<u>Percussor Group</u>	<u>Total</u>
<u><30</u>	<u>18(90%)</u>	<u>11(55%)</u>	<u>29(72.5%)</u>
<u>30-40</u>	<u>1(5%)</u>	<u>5(25%)</u>	<u>6(15%)</u>
<u>>40</u>	<u>1(5%)</u>	<u>4(20%)</u>	<u>5(12.5%)</u>
<u>Total</u>	<u>20(100%)</u>	<u>20(100%)</u>	<u>40(100%)</u>
<u>Mean ± SD</u>	<u>25.95±6.34</u>	<u>31.75±10.69</u>	<u>28.85±9.16</u>

Graph 1:

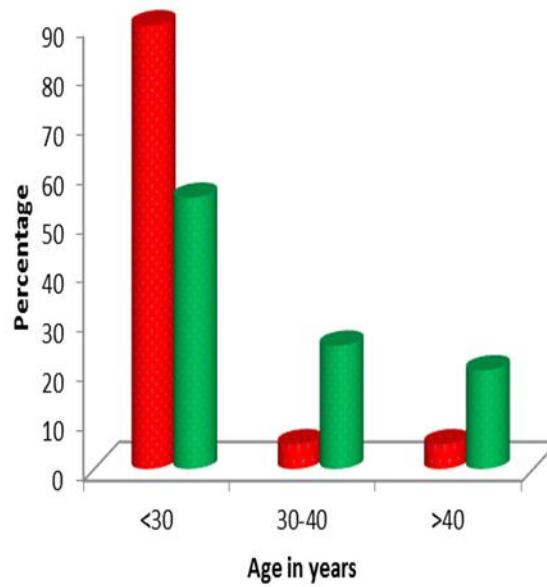


Table 2: Gender distribution of patients studied in two groups studied

<u>Gender</u>	<u>Dry Needling Group</u>	<u>Percussor Group</u>	<u>Total</u>
<u>Female</u>	<u>10(50%)</u>	<u>14(70%)</u>	<u>24(60%)</u>
<u>Male</u>	<u>10(50%)</u>	<u>6(30%)</u>	<u>16(40%)</u>
<u>Total</u>	<u>20(100%)</u>	<u>20(100%)</u>	<u>40(100%)</u>

Graph:

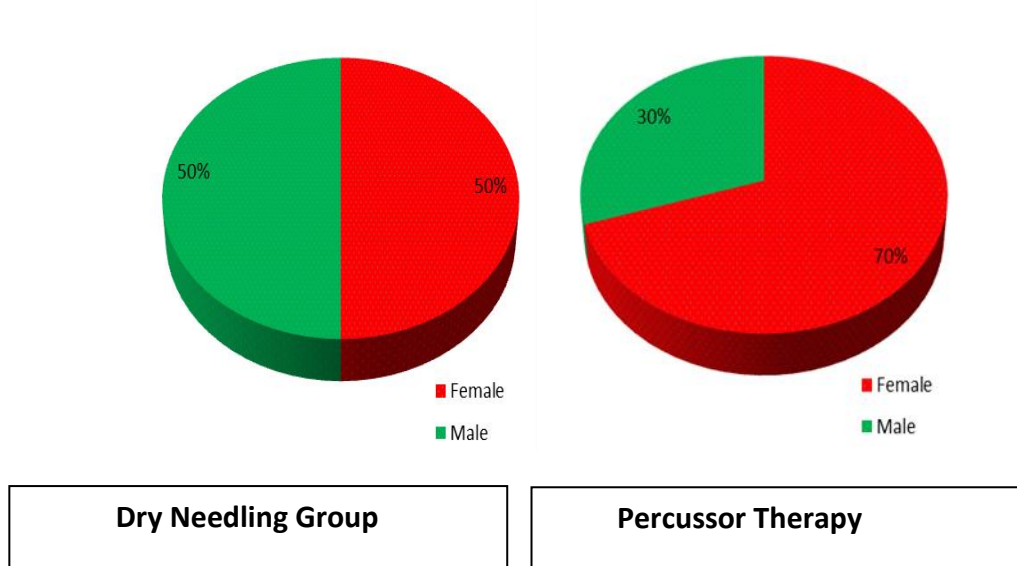
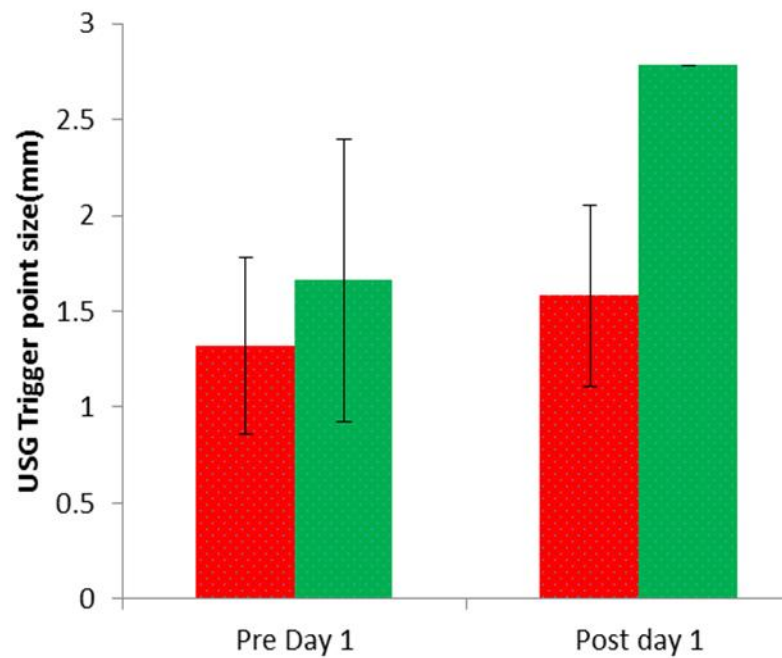


Table 3: Assessment of USG Trigger point size (mm), USG Muscle width(mm), Pressure Algometry and Numerical Pain Rating Scale.

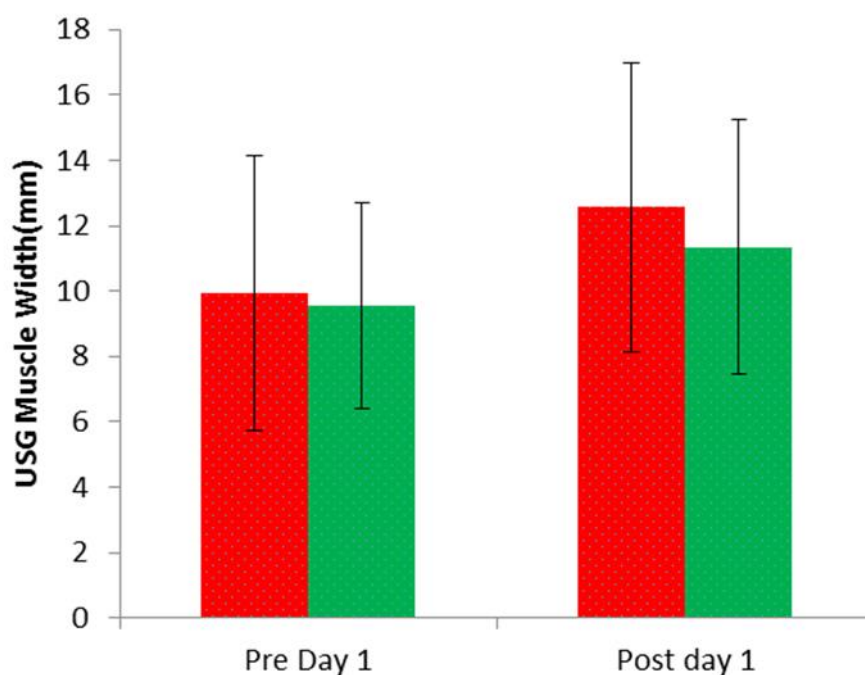
Variables	Dry Needling Group	Percussor Group	Total	P Value
USG Trigger point size(mm)				
Pre Day 1	1.32±0.46	1.66±0.74	1.49±0.63	0.084
Post day 1	1.58±0.47	2.78±3.85	2.18±2.78	0.173
USG Muscle Width(mm)				
Pre Day 1	9.94±4.21	9.54±3.15	9.74±3.68	0.733
Post day 1	12.57±4.42	11.34±3.9	11.95±4.16	0.358
Pressure Algometry				
Pre Day 1	1.5±0.19	1.25±0.2	1.37±0.23	<0.001**
Post day 1	1.92±0.12	1.47±0.24	1.69±0.3	<0.001**
Numerical Pain Rating Scale				

Pre Day 1	4.75±0.79	6.35±1.23	5.55±1.3	<0.001**
Post day 1	2.35±0.99	4.25±1.41	3.3±1.54	<0.001**

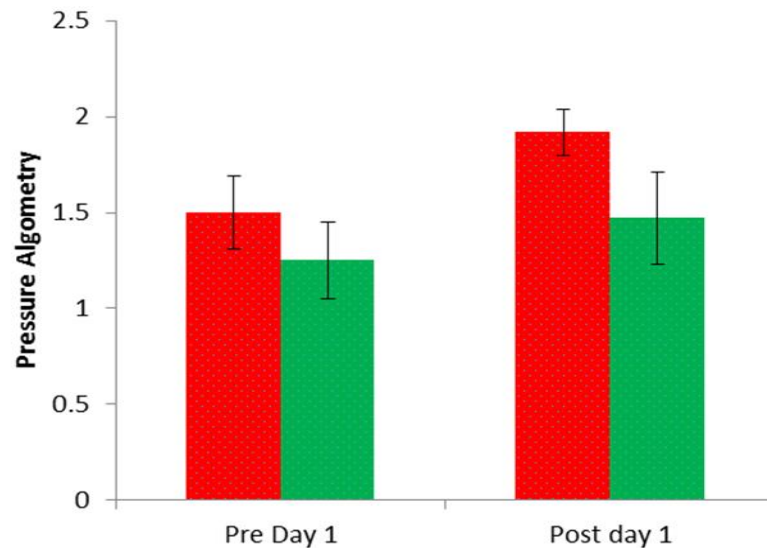
Graph 3.1:



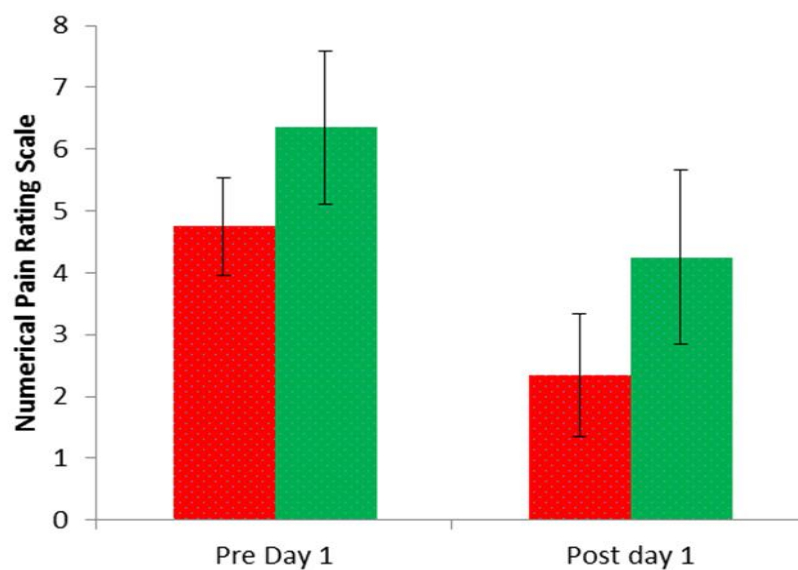
Graph 3.2:



Graph 3.3:



Graph 3.4:



3. Results

- Table 1 Graph 1 represents Age distribution of the patient in both the Groups. In Dry Needling group, 90% of the patient were there in less than 30 yrs of age, 5% of the patients were there between 30-40 yrs of age while 5% of the patients were there between

40 yrs of age. In Percussor Group, 55% of the patients were there in less than 30 yrs of age, 25% of the patients were there between 30-40 yrs of age while 20% of the patients were there between more than 40 yrs of age.

- Table 2 Graph 2 represents gender Distribution of the patients in the two groups

studied. 50% of male and 50% of the female were there in Dry Needling group while 50 % of male and 50% of the female were there in Percussor therapy group.

- Table 3 Graph 3.1. represents size of the trigger point on USG. In Dry Needling Group, on day 1 pre-treatment trigger point size was 1.32 ± 0.46 and post-treatment on Day 1 was 1.58 ± 0.47 which was seen to be increased post-treatment with p value 0.173. In Percussor Group, On Day 1 pre-treatment trigger point size was 1.66 ± 0.74 and post-treatment on Day 1 trigger point size was 2.78 ± 3.85 which was seen to be increased post treatment with p value 0.173.
- Table 3 Graph 3.2 represents width of trigger point on USG. In Dry Needling Group, On Day 1 pre-treatment width of the muscle was 9.94 ± 4.21 and post-treatment on Day 1 width of the muscle was 12.57 ± 4.42 which was seen to be increased post-treatment. In Percussor Group, On Day 1 pre-treatment width of the muscle was 9.54 ± 3.15 and post-treatment on Day 1 width of the muscle was 11.34 ± 3.9 which was seen to be increased post-treatment with the p value 0.358.
- Table 3 Graph 3.3 represents Pain Pressure Threshold of the patient studied. In Dry Needling Group, On Day 1 pre-treatment pain pressure threshold of the patients was 1.5 ± 0.19 and post-treatment day 1 pain pressure threshold of the patient was 1.92 ± 0.12 which was seen to be increased post treatment with p value <0.001 . In Percussor Group, On Day 1 pre-treatment pain pressure threshold of the patient was 1.25 ± 0.2 and Post-treatment on Day 1 pain pressure threshold was 1.47 ± 0.24 which was seen to be increased post-treatment with the p value <0.001 .

- Table 3 Graph 3.4 represents Numerical Pain rating Scale of the patients studied. In Dry Needling Group, On day 1 pre-treatment NPRS of the patient was 4.75 ± 0.79 and post-treatment On day 1 was 2.35 ± 0.99 which was seen to be reduced post-treatment. In Percussor Group, On Day 1 pre-treatment NPRS was 6.35 ± 1.23 and post-treatment NPRS On Day 1 was 4.25 ± 1.41 which was seen to be reduced post-treatment with p value <0.001 .

4. Discussion

Myofascial According to the definition of a trigger point, it is "A hyperirritable area in a taut band of the skeletal muscle that is painful on contraction, stretching, or stimulation and elicits a referral pain far from the point." Due to the pulling force of the contraction knot on the muscle fibres, taut bands can be seen on both sides of the knot. Trigger Areas make a muscle tighter than it should be, which weakens it and places stress on the points where the muscle attaches to the bone. In many cases, this causes pain in neighbouring joints. In order to treat a trigger point in the trapezius muscle, the study compared the immediate effects of Dry Needling and Percussor. In this study, patients in Group A who received dry needling therapy and those in Group B who received percussion therapy both shown greater improvement in pain threshold while treating trapezius muscle trigger points. Dry Needling is a professional procedure that involves penetrating the skin with a small filiform needle to activate deep myofascial trigger points (MTrPs). The GK-3 Percussor has an advantage over trigger point therapy in that it relieves muscle

Journal of Coastal Life Medicine

contractions or tension build-up in hypersensitive areas that, when stimulated, might cause discomfort elsewhere in the body. According to this study, both dry needling and percussion are equally beneficial as a quick fix for reducing pain and enhancing functional dependence. In both groups, hypoalgesia was felt right away after the treatment. After therapy, there was statistically significant improvement in both groups' pain thresholds. Dry needling's local effects led to vasodilatation and an increase in capillary permeability, which facilitated healing and analgesia. Improved perfusion and the reduction of muscle spasm brought on by somatovisceral response helped to reduce pain. Clinically, individuals in both groups reported less pain and higher functional levels. After receiving treatment with Percussor, the patient experienced heaviness. The effectiveness of mechanical vibrations that reach induced pluripotent stem cells through vessels was the main focus. A thorough evaluation of each cell in a time-course image analysis showed that vibrations can improve cell growth as an early effect and, on the other hand, negatively affect cell growth and adhesion as a delayed effect after multiple passages. The results of the experiments showed that vibration stress significantly affects the efficiency of cell manufacturing. According to vibration treatment, "All most all vibratory circumstances demonstrated increase in cell growth rates in contrast to control group which was non-vibratory in nature," this phenomena can be explained. The size of the muscle and the size of the trigger point, or hypoechoic region, were both enhanced immediately following treatment, according

to USG pictures. As soon as a needle is inserted, blood flow to the skin increases; this effect is amplified when the needle enters a muscle beneath the skin. It intensifies further with stimulus, inducing a local twitch response (Sandberg et al 2003). Thus, patients in both groups clinically reported feeling heavy right away following therapy, along with a notable reduction in discomfort and an increase in functional level.

5. Conclusion

Therefore, the above study can be concluded by reporting significant depletion of pain and increase in Pain Pressure Threshold as immediate effects of Dry Needling and Percussor. Similar effects were perceived in both the groups after the treatment. Null Hypothesis thus proven.

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Journal of Coastal Life Medicine

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