

ROLE OF SOUND WAVE THERAPY (Sound healing) USING TUNING FORK WITH CONVENTIONAL THERAPY TO TREAT TEMPORO MENDIBULAR DYSFUNCTION SYMPTOMOLOGY

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KEYWORDS

VAS (Visual Analog Scale), SF-36 SCALE, Temporo-mandibular disorders (TMDs) temporomandibular joint (TMJ), Sound healing.

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Abstract

Background: The primary objective of the present study is to evaluate the effectiveness of sound healing using tuning forks alongside conventional physiotherapy intervention to improving dynamic function in athletes diagnosed with TMJ dysfunction. Pre and post evaluation was performed on 15 participants using the VAS (Visual Analog Scale),SF-36 scale. The findings suggest a significant reduction in pain level and improvement in range of motion and functional abilities and dynamic function following the intervention. These data suggest that the application of sound healing using tuning forks alongside conventional physiotherapy intervention is effective intervention for treating TMJ dysfunction.

INTRODUCTION

The TMJ is one of the most frequently used joints in the human body, as it is continuously involved in essential activities such as chewing, swallowing, speaking, and facial expressions. Proper function of the joint depends on the coordinated action of

the muscles of mastication, including the masseter, temporalis, medial pterygoid, and lateral pterygoid muscles. Any dysfunction affecting these muscles or the joint itself can interfere with normal jaw movement and contribute to temporo - mandibular disorders

(TMD) (1,2). Therefore, effective management requires careful identification and treatment of the factors contributing to the disorder.

TMD-related symptoms are relatively common among competitive athletes. In modern competitive sports, athletes continuously strive to enhance performance, often exposing themselves to high physical demands. These demands may increase the likelihood of TMJ dysfunction, particularly in sports involving repeated trauma or excessive loading of the facial region(3,4,5). The selection of an appropriate treatment approach should focus on addressing the underlying factors contributing to the condition, which may include necessary lifestyle modifications. In patients with temporomandibular disorders (TMD), treatment primarily aims to relieve pain, deactivate myofascial trigger points, restore normal muscle length and tension, and improve joint mobility. A variety of conservative interventions can be used, including therapeutic exercises(1,7), electrotherapy(6), heat therapy, occlusal management, dry needling(9), and trigger point injection therapies such as botulinum toxin, depending on the patient's clinical presentation(8). Sound healing is based on the concept that different tissues and organs

of the body possess their own natural vibrational characteristics. When normal physiological balance is disrupted, these vibrations may also be altered. According to the principle of resonance, applying specific sound frequencies may help restore this balance by influencing the body's natural vibratory patterns. In this study we are administering a different technique using sound wave through a tool known as tuning fork with some therapeutic exercises and manual therapy (6,7) to observe the effect of sound waves(sound healing) in order to find a alternate way of using sound wave to treat TMJ dysfunction with combination of exercise therapy and manual therapy.

Tuning forks are widely used in sound healing because of their ability to produce precise vibrations that may promote relaxation and support overall well-being. Practitioners believe that these vibrations can help induce a deep state of relaxation, enhance the flow of energy throughout the body, improve mental clarity, reduce stress and anxiety, release areas of tension, and restore balance within the nervous system and other physiological systems. These potential effects have contributed to the growing use of tuning forks as a complementary therapeutic tool(10,11,12,13).

Resistance training(14,15) is widely used in rehabilitation to improve muscle strength, endurance, and functional performance. In individuals with temporomandibular disorders (TMD), resistance-based exercises are commonly prescribed to strengthen the muscles responsible for jaw opening and closing. These exercises involve performing controlled jaw movements against gentle resistance, which helps enhance muscle function and improve mandibular stability.

Myofascial release is frequently applied in the management of a variety of pain-related conditions, including muscle tightness, muscular pain, joint discomfort, headaches, neck pain, and back pain. The therapeutic method works by applying prolonged pressure to the fascial system, which helps decrease tissue stiffness and restore normal tissue mobility(16,17,18).

Dry needling(DN) is an invasive technique that involves inserting a fine thin monofilament needle into symptomatic soft tissue to alleviate pain, reduce disability(19) and associated neuromuscular dysfunction. The physiological effects of dry needling may vary depending on the depth of needle insertion. While superficial needling primarily influences the skin and

superficial connective tissues, deeper insertion reaches structures such as the fascia and muscle layers, potentially producing more pronounced therapeutic effects(20).

The proposed study includes, major clinically sound outcome measure i.e. the visual analog scale (VAS) is used to assess the subjective pain in patient with TMJ dysfunction before and after the intervention. The VAS is a very frequent and widely used method for quantifying pain because the scoring on vas is easy reliable and valid in clinical setting. On the VAS 0 represents no pain and 10 represents extreme pain and SF 36 the 36-Item Short-Form Health Survey (SF-36) is the most widely used includes eight health concepts judged as the most affected by disease and treatment, selected from 40 concepts assessed in the Medical Outcome Study. Together, these outcome measures allowed for a comprehensive assessment of both subjective and objective improvements. The proposed study is expected to provide valuable insights that can enhance clinical practice and improve patient outcomes, making it a meaningful contribution to the field.

AIM & OBJECTIVES OF THE STUDY

- To assess the efficacy of sound wave using tuning fork to reduce TMJ muscle tension.
- To assess the efficacy of traditional physiotherapy exercises to reduce the related symptoms of temporo mandibular dysfunction.
- To assess the effects immediate and delayed effects of manual therapy to reduce symptoms related to TMJ dysfunction.
- To assess qualitative measures on Activity of daily living and quality of life of people affected with TMJ Dysfunction

MATERIALS AND METHODOLOGY

The cross sectional research design was used in study. A cross sectional study is a sort of observational research in which data is collected at a single moment in time to evaluate the relationship between variables. The study used randomized sampling as its sample design. The participants (Athletes) were affected with TMJ dysfunction related symptoms. These individuals were involved in the study to see how sound healing using

tuning forks alongside conventional physiotherapy intervention affected their condition.

Paper and pencil for data recording, chair for participants to sit on during assessment and treatment, a treatment couch, tuning forks, dry needle, assessment form, consent form, towel for comfort or support were all used in the study.

SELECTION CRITERIA:

Inclusion Criteria:

- Age group of 20 – 40 years
- Patient with symptoms related to TMJ dysfunction (Symptom include headache, tension, fatigue or spasm of the masticatory muscles, bruxism, teeth grinding, clenching and abnormal posture, fibromyalgia.)
- Patients with normal vitals
- Patients with no other complications
- Voluntary participation (e.g. ability to give written informed consent)

Exclusion Criteria:

- Patient having chronic disease
- Age group- below 20 and above 40 age group not included
- Patient with secondary complications
- Unconscious and unoriented patient

- Participants who are unwilling and unable to follow instructions and go through the testing procedures.

SAMPLE SIZE AND STUDY DURATION

For this study the sample size was 15 participants; the individual were chosen at random from the research population to ensure representativeness and adequate data for analysis. The Study was carried out (5 times a week) for six weeks, individuals in a clinical environment had therapy as part of the study in pacific college of physiotherapy, department of physiotherapy (PMCH) pacific medical university (Udaipur), after obtaining ethical committee approval dated 6-10-2025, PMU/IEC/MPT/2025. All participants completed information and consent form at recruitment. This time frame allowed for evaluation of subjects response to the therapy as well as any changes in their pain, range of motion and functional ability. Each session was scheduled for 40-45 minutes. This period was set aside to ensure the patient had enough time to execute the procedure correctly.

PROCEDURE

Permission for conduct Study is taken from the institutional ethical committee of PMCH (**Protocol no. PMU/IEC/MPT/2025**), Pacific medical university bhilo ka bedla Udaipur(RAJ).

Athletes Diagnosed with TMJ dysfunction(Symptom include headache, tension, fatigue or spasm of the masticatory muscles, bruxism, teeth grinding, clenching and abnormal posture, fibromyalgia.) by the Physiotherapy department, Orthopedic department OPD; initially assessed for the inclusion or exclusion criteria. Prior to the treatment procedure, all participants were informed about the purpose, procedures, potential benefits, and possible risks of the study. Written informed consent was obtained from each participant prior to enrollment.

15 subjects were selected on the basis of inclusion criteria

(n=15) treated with Manual therapy + Exercise + twice in a week tunic fork therapy.

Sound wave frequency (tuning fork)

- Using sound wave frequency (tuning fork).sound waves creates scaler waves. Surroundings forms begins resonating with the scaler waves.

Kling the tuning forks, and they will be held at a 90-degree angle near the ear or temporal area for 10 runs or 10 times, 30 seconds to each ear or temporal area until the sound lasts. This will be done twice a week for 6 weeks.

- Manual release – masseter , pterygoid , buccinator.
- Trigger point release.
- Exercises includes – stretching, relaxation techniques, strengthening exercises.

Patient position – Seating in an upright position with the head and neck maintained in a neutral posture.

i) Depression (Mouth Opening): 10 rep x 2 set (twice in a day)

The participant attempted to open the mouth while gentle resistance was applied under the chin using the palm or a closed fist. The jaw was held in this position without allowing visible movement. (Hold for 5–10 seconds, followed by a relaxation period of 5 seconds).

ii) Elevation (Mouth Closing): 10 rep x 2 set (twice in a day)

The participant attempted to close the mouth while gentle resistance was provided by placing the index and middle fingers against the lower incisors, preventing complete closure. (Hold for 5–10 seconds, followed by a relaxation period of 5 seconds).

iii) Lateral rotation (side to side Jaw Movements) : 10 rep x 2 set (twice in a day)

The participant performed right and left lateral jaw movements while the therapist (or the participant using self-resistance) applied gentle counter-resistance over the lateral aspect of the mandible in the opposite direction of the movement. (Hold for 5–10 seconds, followed by a relaxation period of 5 seconds).

RESULTS

A total of 15 participants were included in the study, 8 females and 7 males. In the 20–25 years age group 5 participants, 26–30 years age group, 7 participants, 31–40 years age group, 3 participants, were participated.

VAS SCORE - (INTERVENTION)

Table 1: Exhibiting Descriptive Statistics for VAS Score

Time Point	N	Minimum	Maximum	Mean	Std. Deviation	F	Sig.
VAS Pre	15	6	8	7.13	0.64	74.72	0.001
VAS Post	15	2	6	4.27	1.22		
Overall	30	2	8	5.70			

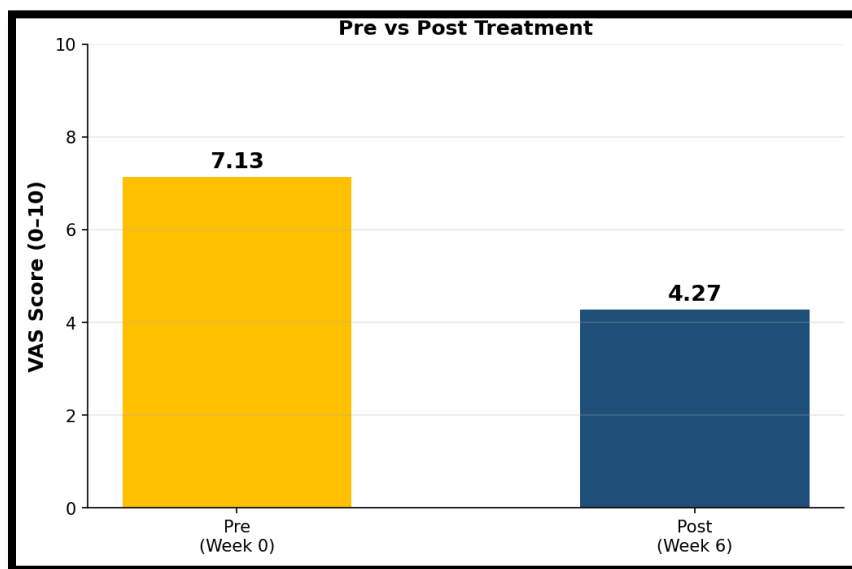


Figure 1 Exhibiting VAS Score for (Intervention) - Pre vs Post Treatment

Table 1 presents the VAS scores. The mean VAS score decreased significantly from 7.13 ± 0.64 (Pre, Week 0) to 4.27 ± 1.22 (Post, Week 6), indicating a meaningful reduction in pain intensity. The ANOVA test confirmed a statistically significant change ($F = 74.72$, $p = 0.001$).

Figure 1 clearly shows the decline in VAS pain scores after 6 weeks of treatment demonstrating that the intervention was effective in reducing TMJ-related pain. The 2.86-point reduction represents a clinically meaningful improvement.

1.SF-36 SCORE INTERVENTION

Table 2: Exhibiting Descriptive Statistics for SF-36 Score

Domain	Time	N	Min	Max	Mean	SD	F	Sig.
PF	Pre	15	49	68	57.73	6.56	37.00	0.001
	Post	15	48	86	68.53	11.38		
RP	Pre	15	40	60	52.47	6.67	48.00	0.001
	Post	15	53	77	67.67	7.5		
BP	Pre	15	27	47	38.67	6.02	59.65	0.001
	Post	15	39	74	58.53	9.68		
GH	Pre	15	47	65	55.67	5.58	36.15	0.001
	Post	15	50	75	66.13	6.69		
VT	Pre	15	33	57	45.87	7.07	47.50	0.001
	Post	15	49	73	60.87	6.59		
SF	Pre	15	40	60	47.27	5.95	54.50	0.001
	Post	15	52	77	65.07	7.15		
RE	Pre	15	55	72	64.07	5.71	23.65	0.001

MH	Post	15	60	81	69.53	6.5	28.83	0.001
	Pre	15	50	70	59.87	6.91		
	Post	15	58	78	67.4	6.57		
Overall	Pre	15	46	58	52.67	3.09	32.18	0.001
	Post	15	60	69	65.4	2.61		

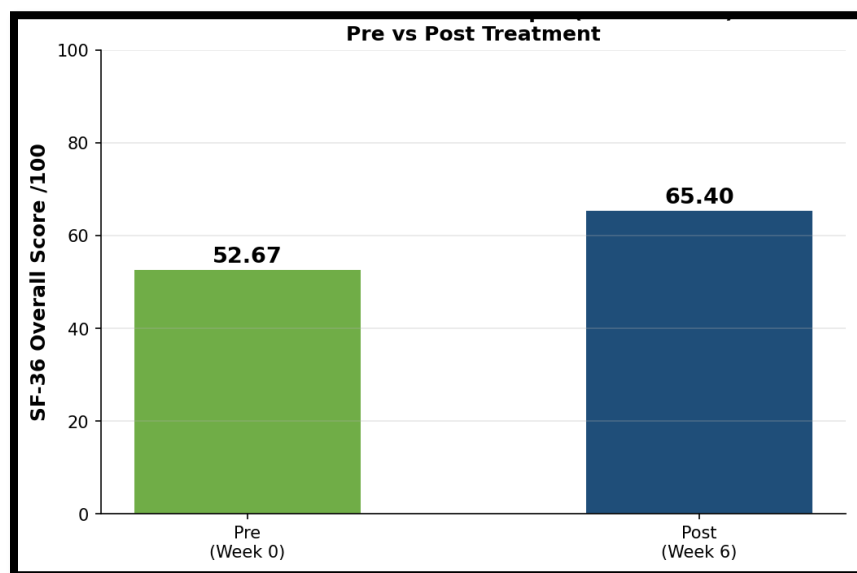


Figure 2 Exhibiting SF-36 Overall Score - Pre vs Post Treatment

Table 2 presents the SF-36 scores. The Overall SF-36 score improved from 52.67 ± 3.09 (Pre) to 65.4 ± 2.61 (Post). Among individual domains, Bodily Pain (BP) showed the greatest improvement (Pre: 38.67, Post: 58.53), followed by Vitality (VT) and Social Functioning (SF), which are the domains most commonly affected in

TMJ dysfunction. The ANOVA results confirm statistically significant improvements across all domains ($p = 0.001$).

These results support the intervention's effectiveness in improving physical, social, and emotional health outcomes in TMJ patients over 6 weeks.

DISCUSSION

The present study was design to examine the effects of sound healing using tuning forks alongside conventional physiotherapy intervention, in athletes affected with TMJ dysfunction. A total of 15 patients were included and assessed using pre- and post-intervention outcome measures. The outcome measures used were the VAS (Visual Analog Scale), SF- 36 scale. The findings suggest a significant reduction in pain level and improvement in range of motion and functional abilities following the intervention. These data suggest that the application of sound healing using tuning forks alongside conventional physiotherapy intervention for treating TMJ dysfunction or related symptoms.

Sound has been used for healing purposes in various traditional practices for centuries, and historical literature suggests that it may have beneficial effects on physical and psychological well-being. In contemporary healthcare, the therapeutic use of sound waves has also become an established part of physiotherapy through modalities such as therapeutic ultrasound and extracorporeal shock wave therapy. However, despite the growing interest in sound-based interventions, the use of tuning fork - based

sound therapy as an adjunct to conventional physiotherapy has received very little attention in the rehabilitation literature. At present, only limited evidence is available to support its clinical application in physiotherapy practice. With this background, the present study explored a different approach by integrating tuning fork-based sound therapy with conventional physiotherapy management. To the best of our knowledge, this combination has not been adequately investigated in individuals with temporo-mandibular dysfunction. The rationale behind this approach was to determine whether the addition of sound therapy could enhance the therapeutic effects of established physiotherapy interventions.

The findings of the present study demonstrated that conventional physiotherapy interventions, including myofascial release, dry needling, and therapeutic exercises, were effective in reducing pain and improving functional outcomes. These observations are consistent with previous studies conducted by Shimada A et.al,(2023), Itoh K et.al,(2011), Pelicioli M et.al,(2017) and Wadhokar OC et.al,(2022) that have reported the beneficial effects of these interventions in the management of temporo-mandibular

disorders. Furthermore, participants who received tuning fork–based sound therapy in addition to conventional physiotherapy showed a slightly greater improvement in the assessed outcomes. Although the additional benefit was modest, the results suggest that combining sound therapy with conventional physiotherapy may provide added clinical value. As this is an emerging area of research, further well-designed studies with larger sample sizes are required to confirm these preliminary findings and establish the role of tuning fork–based sound therapy in physiotherapy rehabilitation. Although the intervention period was limited to 6 weeks but both rehabilitation protocols produced satisfactory clinical improvements.

CONCLUSION

The findings of the study showed that sound healing using tuning forks alongside conventional physiotherapy intervention is statistically significant improvements over a 6-week intervention period in terms of improvements in range of motion and functional ability. The results of this study can be applied clinically to assist healthcare professionals in the better management. However, further studies with a larger sample size and more rigorous inclusion and

exclusion criteria are required to validate and generalize these findings.

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