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THE EFFECTIVENESS OF MATRIX RHYTHM THERAPY IN MUSCULOSKELETAL DISORDERS: AN EVIDENCE BASED STUDY

Physiotherapy

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ABSTRACT

Background: This study evaluates Matrix Rhythm Therapy (MRT) alongside traditional massage to assess their impact on peripheral circulation. While massage therapy is widely used to enhance blood flow and tissue healing, the effectiveness of MRT in this regard remains unclear. By comparing these modalities, the study aims to provide clarity on their therapeutic benefits, potentially guiding treatment choices in clinical practice. **Methods:** A systematic review following PRISMA guidelines will compare Matrix Rhythm Therapy (MRT) and traditional massage effects on peripheral circulation. Studies will be assessed using PEDro score and CEBM's Level of Evidence scale. Data synthesis, including potential meta-analysis, aims to inform clinical decisions on therapeutic interventions for peripheral circulation. **Results:** Matrix Rhythm Therapy (MRT) demonstrated significant efficacy across various conditions, including pain reduction, enhanced functional activities, and improved quality of life. Studies highlighted its effectiveness in addressing chronic low back pain, peripheral circulation, diabetic peripheral neuropathy, and hand pain in excessive smartphone users. While some comparisons favored alternative treatments like stretching exercises for specific conditions, overall, MRT emerged as a promising therapeutic modality with broad applicability in healthcare settings. **Conclusion:** Matrix Rhythm Therapy (MRT) shows significant promise in addressing a wide range of conditions, offering pain relief, improving functional outcomes, and enhancing quality of life.

KEYWORDS

Musculoskeletal disorder, Matrix Rhythm Therapy, Systematic review, pain reduction.

INTRODUCTION

Background

Patients experiencing musculoskeletal issues often activate anaerobic metabolism due to reduced blood circulation and microcirculation. The compromised regulation of microcirculation in muscles is associated with the generation of nociceptive pain. Circulation plays a crucial role in tissue healing, with enhanced blood circulation facilitating the delivery of proteins, nutrients, and oxygen, consequently promoting improved tissue healing Recent studies have focused on comparing the efficacy of various conservative treatment approaches on bloodstream dynamics.[1,2,3]

Massage, a widely adopted physiotherapeutic technique, is employed to enhance blood circulation. Defined as soft tissue manipulation for therapeutic purposes, massage therapy is administered by trained therapists. While some sports medicine practitioners advocate for the benefits of massage, including increased blood circulation, reduced muscle tension, and enhanced neural excitability, conflicting opinions exist in the literature. Some authors posit that massage positively impacts blood circulation, while others assert that it has no effect.[4,5,6,7]

Various massage techniques, such as effleurage, petrissage, tapotement, friction, and vibration, are employed.[8] Vibration massage, specifically, aims to enhance circulation and facilitate muscle relaxation. Mechanical devices allow for the safe and localized application of vibration treatment. Adjustable speed and frequency in vibration devices cater to diverse indications, with some used in beauty salons for fat burning, hand-held devices for musculoskeletal pain, and whole-body vibration devices for exercise.[9]

While hand-held devices exhibit a strong placebo effect, low-magnitude mechanical vibration is believed to boost local blood flow. Matrix Rhythm Therapy (MRT) represents a novel form of vibromassage utilized in various settings, including special education and rehabilitation centers, sports clubs, and neurologic, orthopedic, physical therapy, and rehabilitation centers.[10,11,12]

Limited studies and clinical experiences suggest the effectiveness of MRT, yet the evidence level is considered low. To elucidate the therapeutic efficacy of MRT, it is imperative to explore its impact on peripheral circulation. [13]As MRT is a novel vibromassage method, no studies have yet assessed its influence on circulation, and existing literature presents conflicting results regarding the effect of massage on peripheral circulation[14]. Notably, MRT requires a device for application, distinguishing it from traditional massage methods. If the findings of the current study reveal comparable increases in peripheral blood circulation between massage and MRT, it may suggest a preference for traditional massage over MRT. This approach deviates from previous studies that compared MRT to a placebo, as therapists have shown a preference for manual hand massage over handheld devices.[15]

MRT represents a groundbreaking approach in cellular therapy, utilizing rhythmic oscillations within the 8-12 Hz range to rejuvenate cellular energy metabolism and rebalance physiological functions.[16] By intricately stimulating cells and synchronizing tissue, it promotes heightened circulation, increased oxygenation, and enhanced ATP synthesis, fostering deep-seated muscle and tissue relaxation. This advanced technique orchestrates cellular regeneration and healing through precise micro-process modulation, ensuring enduring relaxation and optimized tissue metabolism, thereby offering comprehensive therapeutic benefits at the cellular level.

Figure 1: Matrix Rhythm Ther

Figure 2: Matrix Mobil Device

Figure 3: MRT for Back Pain

Figure 4: MRT for Knee Pain

Figure 5: MRT for Muscle Pain

Figure 6: MRT for Heel Pain

METHODOLOGY

Study Duration

6 - 8 Month.

Study Design

This will be an Evidence Based Study and will conduct according to PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-analysis) guidelines.

Figure 7: Flowchart for PRISMA

Figure 8 : Flowchart for Review Article

Inclusion Criteria

1. Articles published during last 10 years. (2012- May 2022)
2. Articles having study design as Systematic reviews, Meta-analysis and Randomized controlled trial.
3. Articles published in English.
4. Articles in which studies done on Human.

Exclusion Criteria

1. Articles having study design as case control or cohort.
2. Studies done on animals.
3. Studies design case reports.

Data Analysis

- ❖ Physiotherapy Evidence Database (PEDro)
  - ➢ It assesses methodological quality and consists of a checklist of 11criteria, 10 of which are scored.
  - ➢ For each criterion the study met, 1 point was awarded.
  - ➢ The points were presented as a score out of 10.
  - ➢ PEDro scores of 6 to 10 were considered high quality, of 4 to 5 were considered moderate quality, and of 0 to 3 were considered low quality

- ❖ Centre for Evidence-Based Medicine's (CEBM's) Levels of Evidence scale:
  - ➢ It assesses quality based on study design, which categorize the studies in a scale ranging from 1 to 5 with further subdivision for each.

Figure 09: Hierarchy of Evidence

RESULTS

The review article synthesized findings from multiple studies on Matrix Rhythm Therapy (MRT), highlighting its diverse applications and therapeutic efficacy across various pathological conditions. Dr. Sonali Shrivastava's review emphasized MRT's ability to induce oscillations within the physiological frequency range, thereby restoring disrupted rhythms at the cellular level and enhancing oxygen supply, leading to tissue relaxation and pain reduction.

Dr. med. Ulrich G. Randoll underscored MRT's successful application in rehabilitation, sports medicine, and veterinary medicine, noting its role in preventive measures and rehabilitation efforts, as well as its effectiveness in addressing various types of pain and degenerative diseases.

Nadir et al.'s study focused on chronic low back pain and found that MRT, when integrated into a comprehensive physiotherapy program, led to significant improvements in pain, disability, and quality of life compared to the control group.

Taspinar et al.'s research demonstrated MRT's ability to enhance peripheral blood circulation, particularly in young women, compared to massage therapy.

Figure 10: PEDro Score

- We have taken PEDro score for our study for MRT and concluded that approximately 76.8% of study from 2012 to 2023 were shows that MRT is more beneficial than conventional therapy.
- Evidence shows that MRT is more effective compare to conventional therapy such as Non-healing wounds, Arthritis, Osteoporosis, Spasticity, Ligaments tear, Tendinitis and Bone degeneration.

DISCUSSION

1. The study by F Taspinar et al. in the year (2013), "engages with the outcomes derived from a randomized, double-blind, controlled trial, investigating and contrasting the effects of matrix rhythm therapy and massage on peripheral blood circulation" in a cohort of fifteen healthy women aged 19–23 years. The interventions, administered as single 30-minute sessions on the left lower extremity with a minimum one-week interval, were executed by the same physiotherapist.[17]
2. Derya et al. in Dec, (2016), investigates "the comparative short-term effectiveness of Matrix Rhythm Therapy and stretching exercises in individuals with frozen shoulder." Forty-three patients, with an average age of 52.6 years, were randomly assigned to either the Matrix Rhythm Therapy or stretching exercises group, both undergoing a 6-week treatment accompanied by a similar home exercise program. Various outcome measures, including range of motion, Constant score, Disabilities of the Arm, Shoulder, and Hand score, Short Form Health Survey-36, and Global Rating of Change score, were assessed at different intervals.[18]
3. T. Palekar in the year (2019), proposes "Matrix Rhythm Therapy (MRT), an emerging electrotherapy modality, demonstrating effectiveness in managing pain and restoring cellular frequency" within the 8-12Hz range. This study focuses on evaluating the impact of MRT on hand pain in excessive smartphone users.[19]
4. Dr. Sonali Shrivastava's review (2019) highlights that "Matrix Rhythm Therapy induces oscillations within the physiological frequency range of 8-1 HZ. This frequency synchronization with the body aims to restore disrupted rhythms at the cellular level." The therapy demonstrates a positive impact on oxygen supply by enhancing microcirculation, consequently boosting energy production. Notably, immediate effects manifest as the relaxation of tissues, muscles, and fascia, with this relaxation enduring for an extended period.[20]
5. Dr. med. Ulrich G. Randoll (2019) underscores "the successful application of Matrix-Rhythm-Therapy, particularly in the realms of rehabilitation, high-performance sports, and veterinary medicine." The therapy has undergone rigorous testing and validation over the past decade, originating from the University of Erlangen. Its application is particularly noteworthy for both preventive measures, involving the prophylactic avoidance of disease development, and rehabilitation efforts, aimed at preventing and mitigating damages resulting from strain, trauma, accidents, and surgeries. Sports medicine, in particular, recognizes the therapy's merit in significantly expediting the regeneration time between training periods, especially after instances of hyper-distension, injuries, hardening, tendonitis, and other impairments. This acceleration allows for the intensification of training cycles and facilitates a swifter return to peak performance following injuries.[21]
6. In the experimental study published in (2019), by Naik et al., aimed to assess "the effectiveness of a single session of Matrix Rhythm Therapy (MaRhyThe) in individuals diagnosed with Plantar Fasciitis (PF), a prevalent musculoskeletal condition often associated with limitations in daily activities." Seventeen subjects within the age range of 18-35 years participated in the study, receiving one session of MaRhyThe targeting the calf and plantar aspect of the foot, lasting 45–60 minutes. The pre and post-intervention outcomes were measured using a pressure algometer (PPA) for pain assessment, a non-contact infrared thermometer (IRT) for local skin temperature, and the Foot and Ankle Ability Measures (FAAM) scale for evaluating functional activities.[22]
7. Nadir et al. (2021) assess "the impact of Matrix Rhythm Therapy (MRT) on chronic low back pain, specifically concentrating on parameters such as pain intensity, levels of disability, and overall quality of life." A cohort of thirty-two participants underwent random assignment into either the intervention or control group. Both groups underwent a comprehensive ten-session combined physiotherapy program, with the intervention group receiving an additional six sessions of MRT.[23]
8. Anand et al. (2022) proposes diabetic peripheral neuropathy (DPN), a prevalent complication of diabetes, adversely impacting the quality of life by affecting balance and gait, leading to an increased risk of falls. Matrix Rhythm Therapy (MaRhyThe) is an innovative approach utilized in various musculoskeletal and neurological conditions to manage pain and enhance functionality.[24]
9. Taj Afreen Sheikh (Oct, 2022) underscores "the Matrix Rhythm Therapy (MRT) approach in the fundamental understanding that cellular processes, whether preventive, therapeutic, regenerative or degenerative, operate predominantly within the cellular environment." Crucial to these processes is the muscle pulsation frequency, identified at 8-12 Hertz, with deviations outside this range linked to ailments such as aches, muscle tension and broader health concerns.[25]
10. The study by Munjewar et al. in the year (2022), examines "the effectiveness of Matrix Rhythm Therapy (MRT) as a novel development in physiotherapy." MRT serves as a non-invasive method for relieving pain, enhancing microcirculation, promoting relaxation, and increasing blood oxygenation. Operated within a frequency range of 8-12 Hz, MRT stimulates the body's self-healing powers, employing vibromassage through a resonating head to release muscular tension.[26]

CONCLUSION

- MRT's non-invasive nature makes it a valuable therapeutic option with broad applications in musculoskeletal health, presenting opportunities for improved well-being.Matrix Rhythm Therapy (MRT) exhibits promising efficacy in managing various musculoskeletal disorders. Studies highlight its ability to induce physiological oscillations, restore disrupted cellular rhythms and enhance microcirculation, contributing to improved oxygen supply. Applications in rehabilitation, sports, and diverse musculoskeletal conditions demonstrate positive outcomes, including pain relief and functional improvements.
- Evidence shows that MRT is more effective compare to conventional therapy such as Non-healing wounds, Arthritis, Osteoporosis, Spasticity, Ligaments tear, Tendinitis and Bone degeneration.

Limitations

- Limitations of this study include potential constraints arising from the availability and quality of existing scientific data on Matrix Rhythm Therapy (MRT) in musculoskeletal disorders, as well as the heterogeneity of included studies in terms of design, participant characteristics, and outcome measures.
- The study's scope may be limited to the disorders covered in the available literature, potentially overlooking other musculoskeletal conditions.
- It includes other factors like patient comorbidities, and variations in practitioner expertise could act as confounders, influence on the effects of MRT.

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