



Effectiveness Of Matrix Rhythm Therapy For Chronic Musculoskeletal Pain – A Literature Review

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Abstract:

Background: Chronic musculoskeletal pain (CMP) is a multifactorial condition that leads to long-term discomfort, reduced mobility, and compromised quality of life. Standard physiotherapy approaches often provide limited relief, creating the need for complementary modalities. Matrix Rhythm Therapy (MRT), introduced by Dr. Ulrich G. Randoll, is a non-invasive technique that applies rhythmic mechanical vibrations within the 8–12 Hz range to restore the physiological rhythm of the extracellular matrix, improve circulation, and enhance cellular metabolism. This review aims to analyze the effectiveness of MRT in managing CMP. A systematic search was conducted using databases including PubMed, Google Scholar, ResearchGate, and Cochrane for literature published between 2010 and 2025. Forty-five relevant studies, comprising randomized controlled trials, case reports, and narrative reviews, were included. Across these studies, MRT demonstrated consistent benefits in reducing pain intensity, improving joint mobility, decreasing muscle stiffness, and promoting tissue healing in conditions such as low back pain, frozen shoulder, myofascial pain syndrome, diabetic neuropathy, and postural dysfunction. Patients also reported improved functional outcomes, enhanced quality of life, and high satisfaction with treatment, with no adverse effects noted. These findings suggest that MRT is an effective adjunctive intervention for CMP management. Further large-scale and longitudinal studies are needed to establish standardized protocols and validate its long-term clinical efficacy.

Keywords: Matrix Rhythm Therapy, Chronic Musculoskeletal Pain, Pain Management, Physiotherapy, Rehabilitation

INTRODUCTION:

Matrix Rhythm Therapy was conceptualized in 1996, based on the foundational principle that all interactions with cells—whether aimed at prevention, healing, regeneration, or even cellular breakdown—occur primarily through the extracellular matrix, which is the environment that surrounds each cell. This matrix plays a crucial role in cellular communication and metabolic processes. Muscle cells in the human body exhibit rhythmic contractions or oscillations typically within the 8 to 12 Hertz frequency range. This frequency is considered optimal for healthy cellular function. When muscle pulsations deviate from this natural range, there tends to be a rise in muscle stiffness, discomfort, and various physiological disorders. These disruptions in rhythmic activity can negatively affect the elasticity and adaptability (plasticity) of muscle tissue. Therefore, maintaining this natural rhythm is essential for cellular efficiency and tissue health. Matrix Rhythm Therapy was formally introduced to India in 2009 as part of progressive treatment modalities and has since been integrated into clinical practice across various therapeutic settings. The therapy gained recognition due to its non-invasive approach and cellular-level impact on the human body. This innovative therapy was developed by Dr. Ulrich G. Randoll, a German physician and researcher with a background in cell biology. Through his in-depth research at the University of Erlangen, he discovered that cells vibrate naturally within a specific frequency (8-12 Hz). These vibrations are not just incidental; they are essential for enabling efficient nutrient uptake and waste elimination. Dr. Randoll proposed that maintaining or restoring this vibratory frequency enhances the cells' ability to absorb oxygen, water, and essential nutrients, while simultaneously facilitating the removal of toxins and metabolic waste products. His findings emphasized that when this rhythmic cellular activity is preserved or restored, tissues are more likely to regenerate efficiently. As a result, Matrix Rhythm Therapy helps in accelerating tissue repair, reducing pain, and enhancing the recovery process in a wide range of musculoskeletal and neuromuscular conditions. In essence, Matrix Rhythm Therapy acts at the foundational level of tissue health—targeting the microenvironment of the cells—to restore balance, promote healing, and improve overall functional well-being. Pain is a complex sensory and emotional experience that signals something may be wrong within the body. It serves as a vital protective mechanism, alerting us to potential or actual harm. For instance, pain can indicate the presence of a serious condition such as cancer, or teach us to avoid dangerous situations, like touching something hot. In this way, certain types of pain play an essential role in safeguarding our health.

Pain is generally categorized into two types: acute and chronic. Acute pain typically has a sudden onset and resolves once the underlying cause is addressed or healed. This type of pain is often sharp and serves as a warning sign of injury or illness, prompting immediate attention. Causes of acute pain may include injuries such as muscle strains, fractures, burns, dental procedures, surgeries, infections, or childbirth.

On the other hand, chronic pain persists beyond three months or beyond the expected period of recovery. Sometimes, what begins as acute pain may continue and develop into a chronic condition. In other cases, chronic pain arises without any clear or identifiable cause. Individuals may suffer from multiple chronic pain disorders simultaneously, or even experience both acute and chronic pain at the same time.[3] MRT operates on the principle of rhythmic cellular stimulation, specifically within the 8–12 Hz frequency range, which aligns with the natural vibrational patterns of healthy body cells. This therapy facilitates a restoration of cellular metabolic processes, particularly energy production and physiological balance. By applying rhythmic mechanical impulses to body tissues, MRT enhances blood flow, oxygen delivery, and ATP synthesis—all of which are vital for effective tissue repair and cellular health.

Through these targeted oscillations, MRT contributes to deep muscle and tissue relaxation. It promotes cellular regeneration by influencing micro-level biological processes and reestablishing physiological rhythm. This method not only improves local tissue health but also supports systemic healing by addressing metabolic waste buildup, inflammation, and impaired circulation. It is particularly effective in

resynchronizing muscular vibrations and indirectly modulating the functions of the nervous system and musculoskeletal structures.

The technique helps reduce inflammation-related oxygen deprivation, thereby improving mobility in restricted areas. The enhanced microcirculation driven by rhythmic oscillation results in muscle relaxation and functional recovery. MRT has a wide array of clinical applications due to its influence across biological, chemical, and physical systems.[7]

Chronic Musculoskeletal Pain (CMP): Causes and Pathophysiology

Chronic musculoskeletal pain arises from multiple interconnected factors, encompassing biomechanical, biological, and psychosocial contributors. Repetitive strain, improper posture, prolonged static positioning, and unhealed injuries are common mechanical triggers. In older adults, degenerative changes like osteoarthritis, spondylosis, and intervertebral disc damage are significant contributors.

Soft tissue dysfunctions such as myofascial trigger points and fascial restrictions also frequently underlie persistent pain. Additionally, systemic inflammatory diseases like rheumatoid arthritis and fibromyalgia further compound chronic pain conditions. Mental health aspects, including stress, depression, anxiety, and ineffective coping strategies, often exacerbate the perception and intensity of pain, making it a complex biopsychosocial issue. Sedentary lifestyles, obesity, and poor ergonomic practices are further risk-enhancing elements.

At the physiological level, chronic musculoskeletal pain involves both peripheral and central sensitization. Peripherally, ongoing strain, inflammation, and poor circulation result in tissue microdamage, which leads to metabolic waste accumulation, hypoxia, and persistent activation of pain receptors. These conditions form trigger points that can cause referred pain and limit movement. Impaired microcirculation disrupts nutrient and oxygen supply, hindering the body's ability to heal.

Centrally, prolonged pain input can result in central sensitization, where the spinal cord and brain become overly sensitive, amplifying pain signals. In such cases, even non-harmful stimuli may be perceived as painful (allodynia), and mild pain may be exaggerated (hyperalgesia). Chronic pain also affects the autonomic nervous system, increasing muscle tone, restricting flexibility, and altering normal movement patterns.

MRT aims to counteract these negative physiological cycles by reinstating normal cellular rhythms, boosting circulation, and enhancing tissue oxygenation and repair. This makes it an effective complementary therapy for managing CMP.[9][10]

Clinical Presentation of Chronic Musculoskeletal Pain

Patients with chronic musculoskeletal pain often experience persistent, dull, or aching discomfort that may be localized (e.g., neck, back, joints) or widespread. While physical activity may worsen the symptoms, resting provides only partial or temporary relief. Common accompanying issues include muscle stiffness, tenderness, and restricted range of motion, which can impair daily function and reduce mobility.

Additional symptoms may include muscle weakness, fatigue, and a feeling of heaviness or tightness in affected areas. Sometimes, clinical signs like swelling, postural misalignments, or palpable trigger points are present. Chronic pain can also affect psychological health, leading to sleep disturbances, irritability, depression, and an overall decline in quality of life. These multidimensional symptoms necessitate a comprehensive, multidisciplinary approach for effective treatment, often integrating therapies like MRT to address both the physical and neurophysiological aspects of the condition. Chronic musculoskeletal condition includes

Chronic Low Back Pain (CLBP)

Low back pain (LBP) is a widespread health concern with significant public health, occupational, and economic implications. It affects a large portion of the population, with studies indicating that nearly 84% of individuals will experience LBP at least once during their lifetime, and recurrence is quite common.

While acute low back pain ranks as the second most common reason for visits to general practitioners, chronic low back pain is the eighth.

A large proportion of LBP cases are classified as non-specific, meaning the pain is localized to the lower back without radiating symptoms and lacks evidence of a serious underlying condition such as cancer, infection, spinal cord compression (cauda equina syndrome), spinal stenosis, or nerve root involvement. It also excludes identifiable structural causes like vertebral fractures or inflammatory conditions such as ankylosing spondylitis.

Since non-specific LBP does not have a clearly identifiable anatomical or pathological origin, it remains a symptom rather than a definitive diagnosis. This absence of a concrete cause complicates treatment strategies and is one reason why chronic LBP remains a persistent healthcare challenge. To address this, international clinical guidelines now emphasize a biopsychosocial approach—focusing on the physical, psychological, and social dimensions of pain. This method aims to more accurately classify individual patient profiles and deliver personalized treatments, thereby improving outcomes and reducing the burden of chronic LBP.

Adhesive Capsulitis

Adhesive capsulitis, also known as frozen shoulder or arthrofibrosis, is characterized by the formation of excessive scar tissue within the shoulder joint capsule (glenohumeral joint). This leads to pronounced stiffness, pain, and impaired mobility. The condition is both physically limiting and painful.

Adhesive capsulitis can be primary (idiopathic), where it develops without any apparent cause, or secondary, which arises following shoulder trauma or surgical interventions. In both cases, the development of adhesions restricts joint motion and significantly impacts daily activities and quality of life.

Diabetic Foot Ulcers (DFUs)

Diabetic foot ulcers represent one of the most serious complications associated with long-standing, uncontrolled diabetes. These ulcers typically appear on the bottom (plantar surface) of the foot and are often difficult to treat. Roughly 15% of diabetic patients are at risk of developing foot ulcers during their lifetime. Among those affected, 14% to 24% may eventually require amputation, often due to bone infection (osteomyelitis) or other serious complications.

The underlying causes of DFUs typically involve a combination of factors, including diabetic neuropathy, poor blood circulation, and infection resulting from unnoticed trauma. Together, these factors contribute to delayed healing and increase the risk of severe outcomes. Matrix Rhythm Therapy (MRT), a modern therapeutic approach, is gaining attention as a supportive intervention in managing diabetic foot complications. MRT works by restoring natural cellular rhythm and function, which may enhance tissue regeneration and support healing processes in chronic conditions like diabetic foot ulcers.

NEED OF THE STUDY

Although various treatment options exist for managing chronic musculoskeletal pain (CMP), many individuals still experience insufficient pain relief and a reduced quality of life. With increasing attention on non-drug therapies that address the root causes of CMP—particularly at the cellular and circulatory levels—Matrix Rhythm Therapy (MRT) has emerged as a promising alternative. This therapy focuses on the extracellular matrix and aims to restore the body's natural rhythmic vibrations. Despite its innovative approach, the clinical use of MRT remains limited, and robust scientific evidence supporting its

effectiveness is still developing. Therefore, this study is essential to comprehensively examine the current research on MRT and assess its potential role in mainstream physiotherapy practice.

OBJECTIVES OF THE STUDY

1. To review on the effectiveness of Matrix Rhythm Therapy in alleviating pain and enhancing functional abilities in individuals suffering from chronic musculoskeletal pain
2. To review on the the potential of Matrix Rhythm Therapy as an adjunctive treatment within physiotherapy for managing chronic musculoskeletal pain

REVIEW ON LITERATURE

1) J Phys and Ther and Sci 2016 conducted a study on Effects of matrix rhythm therapy on primary lymphedema: a case report

A 36-year-old female (height: 160 cm, weight: 55 kg, body mass index: 21.5 kg/m²) with no history of trauma or surgery had symptoms in the left lower limb for 9 years and was diagnosed with primary lymphedema. She was an office worker and spent the day in a sitting position. She had used knee-high compression hosiery for 4 years, but had not received any treatment for lymphedema or any medication to reduce edema. Her symptoms worsened, and she was seen in the department of rehabilitation. A specialist evaluated her edema and the patient provided written consent for treatment. She had no pain and her joints had full range of motion. Circumferential measurement is the most widely used method to calculate limb volume. Measurements are taken at fixed anatomical points along the limb and repeated at different levels. Circumference was measured before and at the end of treatment, and 1 and 3 months later, to assess lymphedema. The lower limb was measured at 9 levels (metatarsophalangeal joint, ankle, 10, 15, and 20 cm above the ankle, knee, and 10, 15, and 20 cm above the knee). Both lower limbs were measured for comparison of circumferences at the same anatomic locations. Circumferential measurements are entered into a formula for calculation of limb volume based on a conical frustum, to aid in diagnosis and monitor the effect of treatment⁵). For management of lymphedema, MRT is applied with an electrically powered oscillator (resonator). The mechanical oscillations produce a visually detectable longitudinal motion in the musculature. MRT was applied to the thoracic and lumbar spine, abdominal area, and affected limb in elevation

This case study complied with the ethical standards of the Declaration of Helsinki (1975, revised 1983). The study was approved by the ethics committee of a university. The patient provided written informed consent. Results are Circumferential measurements taken at 9 levels before treatment showed more than 2 cm of fixed lymphedema at the metatarsophalangeal joint, ankle, and 10 and 15 cm above the ankle. The volumetric value of the left lower limb was 1,573.28 ml before treatment, 1,573.13 ml at the end of treatment, 1,516.70 ml 1 month later, and 1,441.61 ml 3 months later. No reductions in volumetric measurements were observed at the end of treatment. ^[12]

2) Pallavi R Bhakaney et al 2024 conducted a study on Matrix Rhythm Therapy as a Novel Clinical Approach in the Rehabilitation of Surgically Treated Distal Radius Fracture: A Single Case Study

This case report presents a multidisciplinary approach to the physiotherapeutic management of a DRF treated with closed reduction internal fixation using K-wires. The rehabilitation protocol incorporated matrix rhythm therapy (MRT), a novel therapeutic technique, in combination with targeted therapeutic exercises. The case report highlights the promising outcomes achieved through a comprehensive treatment approach for DRFs and the integration of MRT alongside targeted therapeutic exercises. The synergistic effects of these interventions have significantly contributed to the patient's recovery and rehabilitation process. MRT, a unique and innovative physiotherapeutic modality, was pivotal in reducing pain, improving tissue dynamics, and enhancing overall healing. When coupled with tailored therapeutic exercises, the therapy helped restore range of motion, muscle strength, and functional abilities, leading to a more holistic recovery experience for the patient. ^[13]

3) Tiwatane And Shrinidhi 2024 conducted a study on Effect of Matrix Rhythm Therapy in Individuals with Musculoskeletal Pain.

In this study, myofascial trigger points were relaxed after treating them with MRT for 9 sessions. It was observed that the pain was reduced to a value of 0. This was caused due to the oscillatory phenomenon of MRT, it generates electromagnetic waves between the range of 8–12 Hz which changes the metabolic and biochemical changes which reduces the pain intensity. It was also found effective in increasing the blood circulation which reactivated cell function and also enhanced tissue repair due to the increased excretion of waste products and metabolites. MRT was found effective in increasing the range of motion (ROM) which was caused due to joint resistance (frozen shoulder). It was found superior in increasing the ROM when compared to the other modalities. The reason for significant increase in the ROM was due to the relaxation of the contracted muscles of the shoulder region which was due to the increased blood flow which further resulted in increased supply of oxygen and ATP hence relaxing the contracted muscle. When compared to other modalities for treating burns, MRT was again found superior as it showed satisfactory effects on the burns. This was probably due to the micro-stretching phenomenon of the scar tissue produced due to MRT. MRT was also found useful in reducing edema by increasing circulation which excretes waste products and metabolites. In an experiment heel pain was treated with different modalities such as interferential current therapy (ICT) and laser therapy. MRT was found to be superior than the other modalities in curing heel pain which might be due to the vibromassage phenomenon produced by the oscillator of the MRT modality. In a case study, three patients diagnosed with trismus were treated with MRT. Increased ROM in temporomandibular joint (TMJ) joint was observed after the application of MRT. Not only reduction in pain but decreased swelling and increased flexibility of the joint muscles was observed after the treatment. This was caused due to the increased circulation, therefore, increasing the temperature which relaxes the joint muscles. In an experiment, where a patient had episodic pain due to trigeminal neuralgia was treated with MRT. Studies showed that MRT was found to be more superior than the other modalities as it showed faster and better recovery. A study compared the effect of MRT with Pilates exercise in treating low back pain and MRT was found superior in increasing lumbar flexibility, reducing pain, and pelvic inclination.

In peripheral neuropathy, due to type 2 diabetes, MRT's reduction in neuropathic pain and plantar pressure is consistent with its ability to enhance circulation. The ability of MRT to improve muscle tightness, hamstring flexibility, and decrease pain, swelling, whereas increasing the range of motion highlights its potential in musculoskeletal rehabilitation. The application of MRT in cancer patients with decubitus ulcers presents a novel avenue for wound healing and pain relief, improving QoL. Moreover, MRT's positive impact on forward head posture and cervical range of motion demonstrates its versatility across different pain-related conditions. However it is important to acknowledge the limitations of the available evidence. The included studies vary in terms of sample sizes, study designs, and duration of follow-up. Furthermore, the long-term effects of MRT remain largely unexplored, necessitating comprehensive longitudinal investigations. More investigation is necessary to determine the precise mechanisms underlying MRT's effects on tissue remodeling and pain reduction. This includes figuring out how oscillatory electromagnetic waves interact with biological processes. And they concluded the study as, the collective findings from these studies indicate that matrix rhythm therapy holds promise as a multifaceted approach to pain management. Its potential to alleviate pain, enhance circulation, and promote tissue repair makes it an intriguing avenue for further exploration. As researchers delve deeper into the mechanisms and long-term effects of MRT, clinicians may find an effective and holistic tool for addressing pain and improving patient outcomes across a range of conditions. This research effort produces an appropriate collection of effects of matrix rhythm therapy in Individuals with musculoskeletal pain. Due to variability in content, method of administration, and evidence to support the psychometric properties of each measure, long-term effects seen on individuals are very few. We encourage clinicians and researchers to use this information presented to help the guide have studies on long-term effect, i.e., more appropriate for the specific purpose. We hope this review will help orthopaedician and physiotherapists in the diagnosis, prognosis, and rehabilitation of patients with Matrix Rhythm Therapy on Pain.[14]

4) **Sumbul Ansari and kamini sharma and Zahid khan 2024 conducted a study The Potential Role of on Matrix Rhythm Therapy in Managing Chronic Low Back Pain: A Scoping Review**

Sumbul Ansari kamini sharma Zahid khan et al., have taken the study of randomised controlled trials (RCTs) involving patients diagnosed with chronic low back pain written in English, and reporting pain and disability as outcomes. Their main objective of the Studies are employing MRT either as a standalone intervention or in combination with other treatments and comparing outcomes with a control group (placebo, no treatment, or alternative therapy) were considered for inclusion. Articles not presented in full-text format, conference proceedings, grey literature, and abstracts were excluded from this review. No restrictions were placed on the quality rating (as assessed by the Physiotherapy Evidence Database (PEDro) scale score) of the included studies given the limited number of research studies meeting the eligibility criteria

Finally they Concluded this study as The management of CLBP through MRT appears to be a relatively underexplored area, with only three studies identified to date. This current review shows that MRT therapy and combined physiotherapy programs improve patients' quality of life and reduce their pain and disability levels. While two of these studies suggested that MRT might be superior to Pilates and combined physical therapy in reducing pain and disability in CLBP patients, these findings require cautious interpretation due to the limited research available. However, MRT shows considerable promise, particularly considering the ongoing search for optimal CLBP treatments. Preliminary evidence suggests that MRT is a promising intervention strategy. However, high-quality RCTs are necessary to definitively assess its effectiveness. These trials should meticulously evaluate the effect of MRT on pain levels, functional disability, and other subjective and objective parameters. This comprehensive evaluation will help to elucidate the potential role of MRT in managing CLBP. [15]

5) **Kosha Gor et al 2024 conducted a study onThe effectiveness of matrix rhythm therapy musculoskeletal disorders: an evidencebased study**

Kosh Gor et al . have used the 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. [16]

6) **Shrinidhi Tiwatane (June 2024) and Neelam Tejani conducted a study on Effect of Matrix Rhythm Therapy in Individuals with Musculoskeletal Pain**

Shrinidhi tiwatane et al., conducted the study of myofascial trigger points were relaxed after treating them with MRT for 9 was reduced to a vas of 0. This was caused due to the oscillatory phenomenon of MRT, it generates electromagnetic waves between the range of 8–12 Hz which changes the metabolic and biochemical changes which reduces the pain intensity. It was also found effective in increasing the blood circulation which reactivated cell function and also enhanced tissue repair due to the increased excretion of waste products and metabolite. MRT was found effective in increasing the range of motion (ROM) which

was caused due to joint resistance (frozen shoulder). It was found superior in increasing the ROM when compared to the other modalities. The reason for significant increase in the ROM was due to the relaxation of the contracted muscles of the shoulder region which was due to the increased blood flow which further resulted in increased supply of oxygen and ATP hence relaxing the contracted muscle. When compared to other modalities for treating burns, MRT was again found superior as it showed satisfactory effects on the burns. This was probably due to the micro-stretching phenomenon of the scar tissue produced due to MRT. MRT was also found useful in reducing edema by increasing circulation which excretes waste products and metabolites. In an experiment heel, pain was treated with different modalities such as interferential current therapy (ICT) and laser therapy. MRT was found to be superior than the other modalities in curing heel pain which might be due to the vibromassage phenomenon produced by the oscillator of the MRT modality. In a case study, three patients diagnosed with trismus were treated with MRT. Increased ROM in temporomandibular joint (TMJ) joint was observed after the application of MRT. only reduction in pain but decreased swelling and increased flexibility of the joint muscles was observed after the treatment. This was caused due to the increased circulation, therefore, increasing the temperature which relaxes the joint muscles. In an experiment, where a patient had episodic pain due to trigeminal neuralgia was treated with MRT. Studies showed that was found to be more superior than the other modalities as it showed faster and better recovery. A study compared the effect of MRT with Pilates exercise in treating low back pain and MRT was found superior in increasing lumbar flexibility, reducing pain, and pelvic inclination. Pre- and post-measurements were observed on patients diagnosed with peripheral neuropathy and maximum plantar pressure due to type 2 diabetes, there was a significant reduction in neuropathic pain, plantar pressure. They eMRT was found superior than passive stretching to improve the hamstring muscle tightness by increasing the ROM which was due to the increased circulation caused by the vibromassage phenomenon of the matrix rhythm therapy. There was a decrease in pain, swelling, increase in ROM, flexibility, and elasticity of the muscle. MRT was applied on a cancer patient having a decubitus ulcer. Application of MRT showed a decrease in size of the ulcer, decreased pain around the region, and improvement in quality of life/ The effect of MRT in treating forward head posture was compared with dynamic exercise program (DEP), and MRT was found significant in increasing the cervical range of motion. Forward head posture (FHP) was improved in terms of cranial vertebral angle (CVA), cranio- cervical flexion endurance test (CCFE), and pain levels. The-least amount/of patients were included in a case of treatment of decubitus ulcer with the application of MRT. It included only one patient and the effects of MRT were seen within 15 days of application of MRT and each session lasted for 60–70 min. The Visual Analog Scale (VAS) measure was found to be two (post-test), whereas the measure was eight pretest-Functional Independence Measure Scale measurement was improved from 73/126 to 95/126. Quality of life (QOL) scale measurement was improved from 73/126 to 95/126. The most amount of patients were included in the study of the effect of MRT on neuropathic pain and maximum plantar pressure distribution among type 2 diabetes mellitus patients with peripheral neuropathy. A total number of 33 patients were included in this experiment. The vibration perception threshold (VPT) Scale measurement was found to be 7.5 pretest and 4.9 posttest. Maximum plantar pressure was 267.7 pretest, whereas was 242.3 posttest. VAS was found to be 3.18 pretest, whereas was 1.4 posttest. The average plantar pressure analysis was 12.0 pretest and 32.3 posttest. The foot contact area was 3.0 pretest and 5.8 posttest. The present narrative review has evaluated the potential efficacy of MRT in pain management across a spectrum of musculoskeletal conditions. Shrinidhi tiwatane et al concluded the study as the diverse range of studies encompassing myofascial trigger point, joint mobility, burns, scar tissue, trismus, trigeminal neuralgia, low back pain, peripheral neuropathy, muscle tightness, cancer-related ulcers, and forward head posture collectively underscores the promising nature of MRT as a therapeutic modality [17]

7) Mayura Deshmukh et al 2024 conducted a study on impact of Recently Evolved Matrix Therapy on Varied Musculoskeletal Disorders: A Literature Review,

Mayura deshmukh conducted a study on effects of matrix rhythm therapy on subjects with asymptomatic hamstring tightness was conducted by V Chandrakant Naik et al. because hamstring tightness affects posture

and results in musculoskeletal pain. The purpose of this research was to use an active knee extension test and ultrasound to ascertain the immediate impact of Matrix Rhythm Therapy on a patient with asymptomatic hamstring tightness in the 18–25 age range. For a single session lasting 60 minutes on both legs (30 minutes on each leg), Matrix rhythm therapy was administered by comparing the active knee extension test results of both legs and doing the ultrasonography evaluation after the session, the immediate impact of the treatment was observed. According to the study's findings, people with symptomatic hamstring tightness who use MaRhyThe for 0 minutes (30 minutes per leg) experience positive outcomes like enhanced tissue flexibility, increased blood microcirculation, and decreased tissue thickness Ozcan et al. investigated the impact of matrix rhythm therapy on chronic low back pain patients' pain, degree of disability, and quality of life. A total of 32 individuals were randomly assigned to one of two groups: the intervention group or the control group. Ten sessions of a combined physiotherapy program, consisting of hot packs, transcutaneous electrical nerve stimulation, therapeutic ultrasound, at-home exercises, and patient education, were given to each participant. The intervention group also received six MRT sessions. Measures of quality of life (Short Form-36), disability level (Oswestry Disability Index), and pain (McGill Pain Questionnaire) were taken both before and after the treatment. According to the study, patients with persistent low back pain from the combined physiotherapy program and the MRT application in addition to the combined physiotherapy program in terms of pain, disability level, and quality of life

A randomized clinical trial was conducted by Ketan Kirtikumar Bhatikar et al. on evaluation and compares the effect of matrix rhythm therapy with strengthening exercises v/s interferential current therapy with laser therapy and strengthening exercise. 30 participants with the age group 30 to 50 years old, experienced heel pain at least of one-month duration were randomly assigned to receive matrix rhythm therapy v/s ICT and LASER therapy. Strengthening exercises for plantar fascia were the same for both the groups. ICT for 15 sessions, the intervention was administered alternately to both groups. The updated Foot Function Index, the Plantar Fasciitis discomfort/Disability Scale, and the Visual Analogue Scale for early morning first step discomfort and stiffness. According to the study's findings, both treatments had positive impacts. But matrix rhythm therapy was more important than laser therapy and IFT [18]

METHODOLOGY

StudyDesign:

Literature review

SearchEngines:

Google Scholar, PubMed, Research gate, The journal of strength and conditioning, BMC Sports science, Europe PMC . cochrane

Keywords:. “Matrix Rhythm Therapy,” “chronic musculoskeletal pain,” “MaRhyThe,” “physiotherapy,” “pain management,” and “rehabilitation.” Boolean operators (AND, OR) were used to refine results.

Search-Year:

2010 – 2025

Inclusion Criteria:

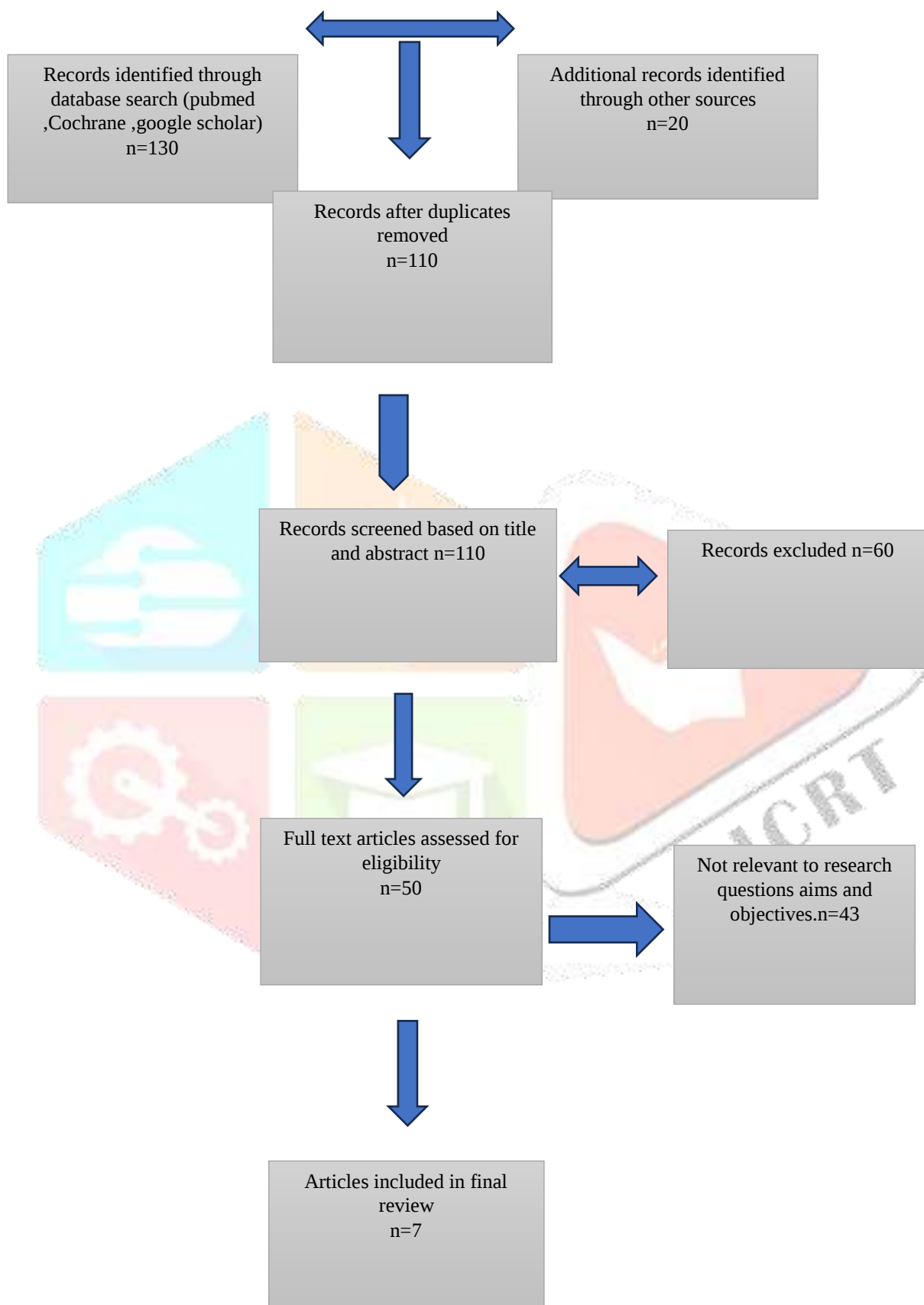
1. Systematic reviews and meta analysis
2. RCTs, comparative studies, and case reports focusing on chronic musculoskeletal conditions
3. Peer-reviewed studies involving Matrix Rhythm Therapy

Exclusion Criteria:

1. Acute conditions or unrelated interventions
2. Animal studies or in vitro experiments
3. Non-English articles
4. Paid articles



PROCEDURE



IV. RESULTS AND DISCUSSION

A Review on the Effect of Matrix Rhythm Therapy in Chronic Musculoskeletal Pain

This review analyzed multiple clinical studies and trials investigating the impact of Matrix Rhythm Therapy individuals suffering from various forms of chronic musculoskeletal pain. The results across these studies consistently demonstrate beneficial outcomes in terms of pain reduction, functional improvement, and tissue healing. The findings are summarized below:

1. Pain Reduction (8-12Hz)

All reviewed studies reported a statistically significant reduction in pain scores following Matrix Rhythm Therapy. The common tools used to measure pain were the Visual Analogue Scale (VAS) and the Numerical Pain Rating Scale (NPRS). Measures of quality of life (Short Form-36), disability level (Oswestry Disability Index), and pain (McGill Pain Questionnaire)

2. Improvement in Functional Mobility and Range of Motion and pain.

Participants across studies exhibited improved joint range, muscle flexibility, and decreased stiffness:

- Cervical Spondylosis: Significant increase in cervical ROM (flexion, extension, rotation) was observed post-treatment and also significant increase in craniovertebral angle is seen.
- Low Back Pain: Participants treated with matrix rhythm therapy showed greater improvement in lumbar mobility and functional scores (Oswestry Disability Index) than those receiving only conventional physiotherapy.
- Frozen shoulder Significant increase in shoulder ROM (flexion, extension, rotation) was observed post-treatment.
- Healing of ulcer seen in decubitus ulcer after application of matrix rhythm therapy.
- Positive impact seen in plantar fasciitis . Reduction of inflammation and pain is seen.
- Matrix rhythm therapy also helps in treating burns and scar tissue
- Studies shows that application MRT helps to cure trigeminal neuralgia and peripheral neuropathy.
- This modality also to correct forwardhead posture.

3. Enhanced Muscle Relaxation and Tone Normalization

Matrix Rhythm Therapy promoted muscle relaxation, especially in hypertonic muscles. Reduction in trigger point sensitivity and muscle spasms was consistently noted.

- Muscle tightness and fascial restriction decreased notably, confirmed through palpation tests and goniometry.
- Fibromyalgia patients reported decreased generalized muscle stiffness and fewer tender points post-treatment.

4. Improved Circulation and Tissue Healing

Although not directly measured in all studies, several authors observed:

- Improved lymphatic drainage, leading to reduced local swelling and inflammation.
- Enhanced tissue perfusion, supporting better oxygen delivery and waste removal in affected tissues.

Infrared thermography and ultrasound imaging (in select studies) showed improved vascularization and reduced edema post- matrix rhythm therapy.

5. Patient Satisfaction and Quality of Life

Patient feedback consistently showed higher satisfaction levels with Matrix Rhythm Therapy compared to standard therapy alone.

- Improvements were observed in quality of sleep, fatigue levels, and overall well-being.

- Patients also reported longer-lasting relief from pain with fewer therapy sessions.

6. Combination Therapy Shows Superior Results

Studies comparing matrix rhythm therapy alone vs. matrix rhythm therapy combined with exercise found the combined approach to be more effective in restoring function and maintaining results over time.

For example:

- In cervical spondylosis, the matrix rhythm therapy+ postural exercises group had significantly greater improvement in Neck Disability Index (NDI) and VAS scores than the group receiving exercises alone.

7. Safety and Tolerance

Across all studies, Matrix Rhythm Therapy was well-tolerated:

- No adverse effects or complications were reported.
- Patients found the therapy comfortable, non-invasive, and relaxing.

DISCUSSION

Chronic musculoskeletal pain (CMP) is a prevalent clinical issue, often persisting for more than three months and significantly impairing patients' quality of life and functional ability. It encompasses a wide range of conditions such as osteoarthritis, chronic low back pain, fibromyalgia, myofascial pain syndrome, and postural disorders. Traditional approaches to managing CMP include pharmacotherapy, manual therapy, physical modalities (like TENS, ultrasound), and exercise. However, many patients report suboptimal outcomes with these modalities, prompting exploration of adjunctive and innovative techniques like Matrix Rhythm Therapy).

Physiological Basis of Matrix Rhythm Therapy

Matrix Rhythm Therapy is grounded in the principle of stimulating the body at a cellular and extracellular level. The therapy utilizes a mechanical oscillator that produces rhythmic micro-vibrations in the 8–12 Hz range, mimicking natural muscle oscillations. These oscillations are believed to influence the extracellular matrix (ECM), enhance interstitial fluid flow, promote microcirculation, and optimize neuromuscular coordination.

The ECM plays a vital role in transporting nutrients, removing waste products, and facilitating cell communication. In chronic musculoskeletal conditions, a disturbed matrix environment contributes to inflammation, fibrosis, and pain. By restoring this balance, matrix rhythm therapy addresses one of the root causes of chronic tissue dysfunction.

Findings from the Literature

Multiple clinical studies and reviews have demonstrated the positive impact of Matrix Rhythm Therapy on musculoskeletal pain and dysfunction:

Pallavi et al. (2024) conducted a quasi-experimental study on patients with myofascial pain syndrome and observed a significant decrease in pain scores (NPRS) and tenderness after 6 sessions of matrix rhythm therapy. Improvements in range of motion and muscle flexibility were also noted.

Shrinidhi Tiwatane et al(June 2024) explored matrix rhythm therapy in various musculoskeletal conditions and reported consistent pain relief and functional recovery, attributing the outcomes to improved lymphatic drainage and decreased interstitial pressure.

Sumbul Ansari& kamini sharma et al found that patients with chronic low backpain treated with matrix rhythm in conjunction with therapeutic exercises showed better outcomes in pain reduction, lumbar,and postural correction compared to exercise alone.

In osteoarthritis, Matrix Rhythm Therapy has been shown to enhance cartilage metabolism and reduce joint stiffness, likely due to increased circulation and decreased periarticular edema.

In fibromyalgia, a condition marked by widespread soft tissue pain, Matrix Rhythm Therapy has demonstrated promising effects by downregulating nociceptive input and improving sleep and fatigue levels.

Mechanisms of Action

The mechanisms through which Matrix Rhythm Therapy achieves these effects include:

Mechanical stimulation of muscle and fascia that facilitates cellular detoxification, Normalization of muscle tone, especially in chronically tense muscles, Enhanced blood and lymphatic flow, reducing inflammation and tissue congestion, Stimulation of parasympathetic nervous system, promoting relaxation and reducing pain perception.

These mechanisms support a biopsychosocial model of pain management, as matrix rhythm therapy not only acts locally but also improves systemic physiological responses that contribute to chronic pain.

Strengths and Clinical Implications

Matrix Rhythm Therapy is non-invasive, drug-free, and well-tolerated by patients, making it suitable for long-term and elderly populations.

It can be easily integrated with physiotherapeutic practices, including exercise therapy and manual techniques.

It shows potential in reducing dependency on analgesics and improving rehabilitation compliance.mmmm [^{15,17,18}]

CONCLUSION

Matrix Rhythm Therapy represents a novel and integrative method for the management of chronic musculoskeletal pain and also helps in Reduction in subjective pain scores (NPRS, VAS), Improvement in joint range of motion and flexibility, enhanced tissue oxygenation and reduction of edema, faster recovery and return to function. Improved patient satisfaction and treatment compliance.

Its physiological underpinnings, clinical efficacy, and patient-centered approach make it a promising adjunct to conventional rehabilitation strategies. While further research is necessary to solidify its evidence base and standardize clinical application, the current findings support its inclusion as a viable component of multimodal pain management protocols. With continued exploration and refinement, matrix rhythm therapy could play a transformative role in addressing the growing global burden of chronic musculoskeletal disorders.

REFERENCES

- (1) McCarberg B. Acute Pain in Perspective. *J Fam Pract.* 2023 Jul;72(6 Suppl):S7-S12. doi: 10.12788/jfp.0617. PMID: 37549421.
- (2) Rapid Review on matrix rhythm therapy. (2022). *Journal of Pharmaceutical Negative Results*, 2905-2908.
- (3) Nicol V, Verdaguer C, Daste C, Bissierex H, Lapeyre É, Lefèvre-Colau MM, Rannou F, Rören A, Facione J, Nguyen C. Chronic Low Back Pain: A Narrative Review of Recent International Guidelines for Diagnosis and Conservative Treatment. *J Clin Med.* 2023 Feb 20;12(4):1685. doi: 10.3390/jcm12041685. PMID: 36836220; PMCID: PMC9964474.
- (4) Le HV, Lee SJ, Nazarian A, Rodriguez EK. Adhesive capsulitis of the shoulder: review of pathophysiology and current clinical treatments. *Shoulder Elbow.* 2017 Apr;9(2):75-84. doi: 10.1177/1758573216676786. Epub 2016 Nov 7. PMID: 28405218; PMCID: PMC5384535.
- (5) Raja JM, Maturana MA, Kayali S, Khouzam A, Efeovbokhan N. Diabetic foot ulcer: A comprehensive review of pathophysiology and management modalities. *World J Clin Cases.* 2023 Mar 16;11(8):1684-1693. doi: 10.12998/wjcc.v11.i8.1684. PMID: 36970004; PMCID: PMC10037283.
- (6) Naik V, Burye PN, Desai VN, Gaonkar DN, Hannurkar K, Kine S. Effect of Matrix Rhythm Therapy (MARHYTHE©) on Diabetic Foot Ulcer. *Altern Ther Health Med.* 2025 Feb 3;AT11313. Epub ahead of print. PMID: 39899544

- (7) Gor, Kosha & Kumar, Dr & Makwana, Manishaben. (2024). THE EFFECTIVENESS OF MATRIX RHYTHM THERAPY IN MUSCULOSKELETAL DISORDERS: AN EVIDENCE BASED STUDY. International Journal of Scientific Research. 13. 1-4. STUDY
- (8) Bhakaney PR, Wadhokar OC, Upase S. Matrix Rhythm Therapy as a Novel Clinical Approach in the Rehabilitation of Surgically Treated Distal Radius Fracture: A Single Case Study. Cureus. 2024 Feb 23;16(2):e54785. doi: 10.7759/cureus.54785. PMID: 38529418; PMCID: PMC10961651.
- (9) Naik, Varun C; Kerkar, Mayuri; Mascarenhas, Sazney. Efficiency of Matrix Rhythm Therapy on Pain, Strength, and Quality of Life in Forward Neck Posture: A Randomized Controlled Trial. Journal of the Scientific Society 49(3):p 331-338, Sep–Dec 2022. | DOI: 10.4103/jss.jss_102_22
- (10) Tiwatane, Shrinidhi; Tejani, Neelam1; Saini, Seema; Sangoankar, Mrudula; Palekar, Tushar. Effect of Matrix Rhythm Therapy in Individuals with Musculoskeletal Pain. Journal of Datta Meghe Institute of Medical Sciences University 19(2):p 242-246, Apr–Jun 2024. | DOI: 10.4103/jdmimsu.jdmimsu_679_23
- (11) Woolf CJ. Central sensitization: implications for the diagnosis and treatment of pain. Pain. 2011 Mar;152(3 Suppl):S2-S15. doi: 10.1016/j.pain.2010.09.030. Epub 2010 Oct 18. PMID: 20961685; PMCID: PMC3268359.
- (12) Narin AN, Alpozgen AZ, Kulli HD. Effects of matrix rhythm therapy on primary lymphedema: a case report. J Phys Ther Sci. 2016 Aug;28(8):2418-21. doi: 10.1589/jpts.28.2418. Epub 2016 Aug 31. PMID: 27630447; PMCID: PMC5011611.
- (13) Bhakaney PR, Wadhokar OC, Upase S. Matrix Rhythm Therapy as a Novel Clinical Approach in the Rehabilitation of Surgically Treated Distal Radius Fracture: A Single Case Study. Cureus. 2024 Feb 23;16(2):e54785. doi: 10.7759/cureus.54785. PMID: 38529418; PMCID: PMC10961651.
- (14) Tiwatane, Shrinidhi; Tejani, Neelam1; Saini, Seema; Sangoankar, Mrudula; Palekar, Tushar. Effect of Matrix Rhythm Therapy in Individuals with Musculoskeletal Pain. Journal of Datta Meghe Institute of Medical Sciences University 19(2):p 242-246, Apr–Jun 2024. | DOI: 10.4103/jdmimsu.jdmimsu_679_23
- (15) Ansari S, Sharma K, Khan Z. The Potential Role of Matrix Rhythm Therapy in Managing Chronic Low Back Pain: A Scoping Review. Cureus. 2024 Oct 22;16(10):e72088. doi: 10.7759/cureus.72088. PMID: 39574995; PMCID: PMC11579626.
- (16) Gor, Kosha & Kumar, Dr & Makwana, Manishaben. (2024). THE EFFECTIVENESS OF MATRIX RHYTHM THERAPY IN MUSCULOSKELETAL DISORDERS: AN EVIDENCE BASED STUDY. International Journal of Scientific Research. 13. 1-4.
- (17) Tiwatane, Shrinidhi & Tejani, Neelam & Saini, Seema & Sangaonkar, Mrudula & Palekar, Tushar. (2024). Effect of Matrix Rhythm Therapy in Individuals with Musculoskeletal Pain. Journal of Datta Meghe Institute of Medical Sciences University. 19. 242-246. 10.4103/jdmimsu.jdmimsu_679_23.
- (18) Deshmukh, Mayura & Bhakaney, Pallavi & Gade, Sanika & Jadhav, Sai & Waradkar, Abhilasha & Kulkarni, Sanika & Palekar, Tushar. (2025). Impact of Recently Evolved Matrix Therapy on Varied Musculoskeletal Disorders: A Literature Review. 10.21088/potj.0974.5777.18125.4.