



A LITERATURE REVIEW TO FIND THE EFFECTIVENESS OF AUTOGENIC INHIBITION FOR IMPROVING QUALITY OF LIFE IN MUSCULOSKELETAL DISORDERS

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ABSTRACT

Musculoskeletal disorders (MSDs) are injuries that affect the musculoskeletal system of the human body. The purpose of this review was to review the literature on musculoskeletal disorders and analyze the results of autogenic inhibition techniques in various musculoskeletal disorders from published articles. Online search engines such as Pub Med, Google Scholar, Science Direct, and PEDro were searched. There were no restrictions on the data applied to review articles. Thirty-four papers were selected for the term autogenic inhibition technique used. Data were tabulated by study type, number of study participants, disease treated, treatment administered, outcome measure, and outcome. This literature review resulted in mixed responses to the results of autogenic inhibition techniques. These contrasting results demonstrate the need for future research. This will help researchers to conduct randomized controlled trials (RCTs) of autonomic suppression and further develop protocols to improve the need for better interpretation and evidence-based information.

Key words: Musculoskeletal Disorders (MSD), Autogenic Inhibition (AI), Reciprocal Inhibition (RI), Muscle Energy Techniques (MET)

I. INTRODUCTION:

According to the National Institute for Occupational Safety and Health, musculoskeletal disorders (MSDs) are disorders that affect the musculoskeletal system of the human body¹. It is an occupational health problem that is increasing in workplaces around the world². The International Labour Organization (ILO) and the World Health Organization (WHO) consider MSDs to be a work-related disease, also called a "new epidemic" that needs to be studied and resolved². It therefore not only impacts the health of workers, but also strains health care systems, the economy of businesses and the social costs of coping with the consequences². In recent years, there has been an increased effort to investigate the causes of musculoskeletal disorders (MSDs) and take measures to prevent them .Up

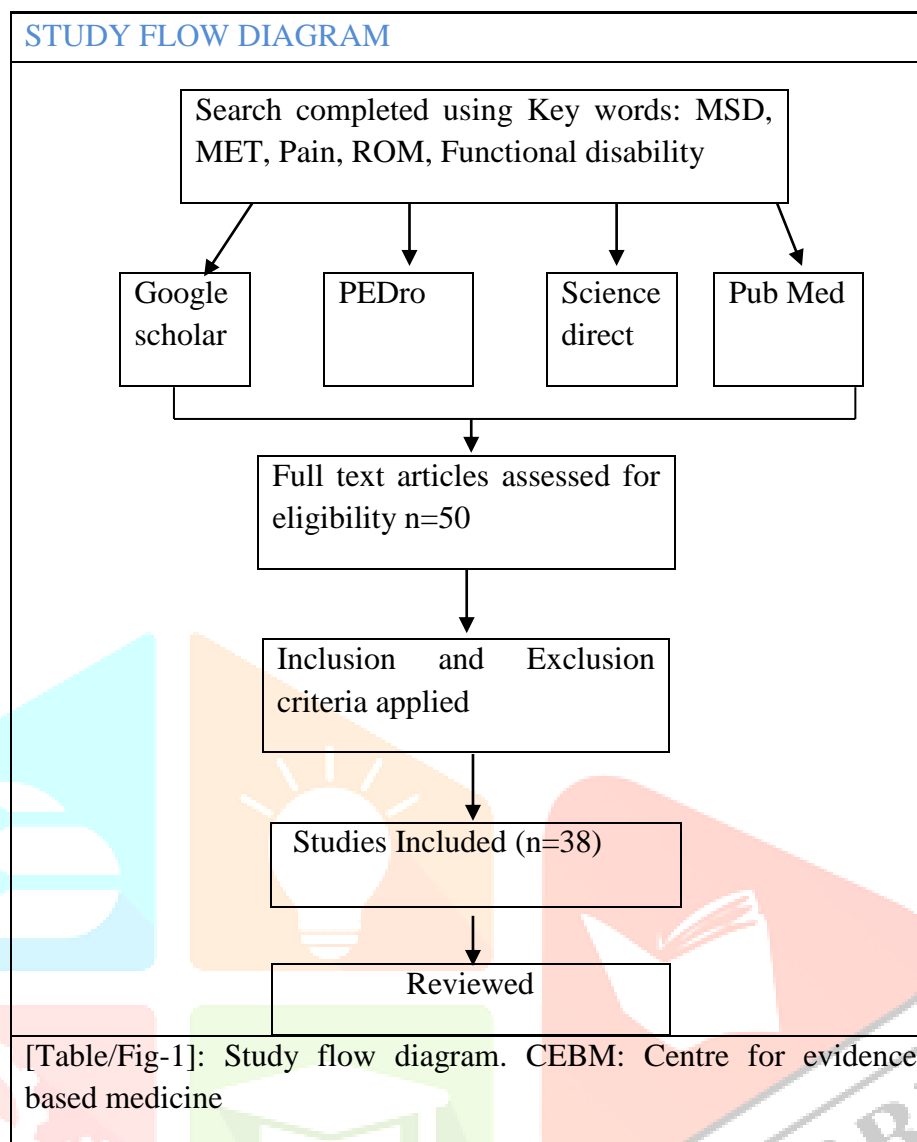
to 96% in 1 year². Many studies have shown that heavy physical strain and poor posture while performing tasks can cause MSDs. Especially in various fields such as manufacturing and warehousing, it is a task that requires lifting, pulling and pushing things⁴. Poor work conditions, such as repeatedly bending over to lift objects, or turning or pushing heavy objects, are all forms of poor posture that can lead to significant performance degradation and postural stress. Overall, these are injuries that affect muscles, bones, nerves, tendons, ligaments, joints, and more. MSDs can be caused due to overexertion, cumulative strain, contact between body parts and equipment or furniture, or a fall. According to Janda, postural muscles tend to be shortened in both normal and diseased conditions⁶. Conservative physiotherapy management can be implemented based on the assessments performed. Manual treatments, ergonomic advice and therapeutic exercises are recommended. Many studies have been conducted on her MET autogenic inhibition in various musculoskeletal disorders: Mechanical neck pain, thigh muscle flexibility, LBP, piriformis syndrome, etc. However, more research is needed on autogenic inhibition in piriformis syndrome.

MET is a mode involving voluntary muscle contraction in response to an operator-provided reaction force. Two osteopathic physicians, Fred Mitchell, Sr. and Fred Mitchell, defined MET as a manual treatment in which the patient produces contractions and reaction forces applied by a physical therapist¹⁰. It mainly involves two physiological phenomena: 1) autogenic inhibition and 2) reciprocal inhibition. Sub-maximal contraction of a muscle followed by extension of the agonist muscle is called autogenic inhibition, and antagonist muscle is called reciprocal inhibition¹⁰. The need for this study was to meet the inclusion criteria first, and in addition, a number of articles on muscle energy techniques (autogenic inhibition and reciprocal inhibition) in MSD were reviewed with results on pain, ROM, and functional impairment. It needs to be validated for extensive research on autogenic inhibition in piriformis syndrome.

The objective of the study includes:

- To review the literature for finding the effectiveness of Autogenic Inhibition in decreasing pain.
- To review the literature for finding the effectiveness of Autogenic Inhibition in improving ROM.
- To review the literature for finding the effectiveness of Autogenic Inhibition in improving Quality of Life.

II. METHODOLOGY:



2.1 Literature search methodology:

The online search engines used to collect the journals were Google Scholar, Pub Med, PEDro and Science Direct. Authors identified articles based on keywords. The article was written in full. A total of 50 articles were identified, of which 38 were selected for review

2.2 Study selection data extraction:

Collected data were tabulated based on sample size, treatment administered, outcome measure used, and the results obtained were ordered chronologically.

Inclusion criteria: 1. Published in English only 2. Muscle Energy Techniques; 3. Published only in peer-reviewed journals; 4. Human participants were studied.

Exclusion Criteria: 1. EDITOR'S OPINION; 2. LANGUAGES OTHER THAN ENGLISH

2.3 Literature evaluation:

The survey results were very different. Of the 50 original articles, 38 articles were eligible according to the inclusion criteria. There were no restrictions on the data applied to review articles. The studies were grouped into 18 RCTs, 7 experimental studies, 6 comparative studies, 2 quasi-experimental studies, 2 systemic studies, 1 quantitative analysis, 1 pilot study and 1 intervention study protocol.

III. REVIEW OF LITERATURE:

SL. NO	Author	Year & Journal	Study design	Participants	Condition	Treatment	Control group	Outcome measure	Results
1	Ronald Schenk, et.al ¹⁶	1994 & The Journal of Manual & Manipulative Therapy	Experimental design	34	Cervical ROM	MET	CROM	CROM device	MET is effective in restore CROM
2	Lenehan KL, et.al ¹⁷	2003 & Journal of Osteopathic Medicine	Pre and post design	59	Gross trunk ROM	MET	-	ARMDno 2	Effective in Trunk ROM
3	Richa Mahajan, et.al ¹⁸	2012 & IJHRS	Comparative Study	45	Subacute Mechanical Neck Pain	MET, Static stretch, Conventional Physiotherapy	-	VAS, CROM, NDI	MET is superior than Stretching in Pain & ROM and improve Quality of life
4	Deepali Sharma, et.al ⁴¹	2014 & IJPR	RCT	20	SI Joint dysfunction	MET, Si joint mobilization	-	VAS, MODI	MET & Mobilization were both effective
5	Agarwal Sonal S ²⁰	2015 & IJMRHS	RCT	100	Hamstring flexibility in young adults	PI-Met, RI-Met	-	ROM	PIR is more effective
6	M.Srikanth, et.al ¹⁹	2015 & IJPHY	Quantitative research analysis	30	Myofascial pain in upper trapezius	MET, Ischial compression, US	-	VAS, ROM (inch tape)	MET is significant in pain, ROM
7	Harshita Yadav, et.al ⁶	2015 & IJTRR	RCT	33	Mechanical Neck pain	MET, DNFT, CROM, Static Stretch, Mobilization	-	NDI, VAS, ROM	Significantly effective in decrease in pain, restore ROM and quality of life
8	Apoorva Phadke, et.al ²²	2016 & HKPJ	RCT	60	Mechanical neck pain	PIRT, stretching, Conventional Exercises	-	VAS, NDI	MET is effective than stretch in pain, functional disability
9	Anjali.S ⁷	2016 & PPG	Pre-test Post-test Experimental	30	Piriformis Syndrome	Deep friction massage, MET	US, Piriformis stretch	VAS, ODI, ROM	MET with deep friction massage

			study design						was more effective
10	Sabitha Eunice Regima, et.al ²¹	2016& IJPESH	Quasi Experimental design	30	Hamstring flexibility among AMU students	Agonist- contract technique	-	ROM	RI-MET is more effective in restoring movement
11	Sushmita singh, et.al ²³	2017&AJP CR	Comparative study	30	OA Knee	PIR, RI, IFT	-	VAS, WOMAC	Combined effective of PIR & RI than alone
12	Joshi T M, et.al ⁴²	2017& IJHSR	RCT	39	Hamstring Muscle Flexibility in Young Healthy Females	Pulsed & Isolytic MET	-	AKE, Hamstring Contracture Test	Equal effectiveness in improving flexibility
13	Mona H. El Laithy, et.al ²⁴	2018 & ISSN	Randomized, single-blinded clinical trial	30	MNP	PIR, Conventional therapy	-	Neck Pain & disability Scale, OB goniometry	PIR is more effective in pain, ROM & functional disability
14	Mohame SeragE, et.al ²⁶	2018& Research Gate	Pretest- Post test trial	40	Spastic children	AI-MET, RI-MET	-	EMG, MRI, Hanson Professional Scale, MACS, MAS apparatus	AI-MET more effectiveness than RI-MET
15	Dr. Tanusree Basak, et.al ²⁵	2018 & IJHSR	Comparative Experimental Study	30	Upper trapezius MTP	Ischemic compression, Dry needling, MET	-	Pain pressure algometry, Spin T Goniometry	IC & DN were equally effective with MET
16	Ewan Thomas, et.al ¹⁵	2019 & BMC	Systematic review	26 studies	MET in symptomatic & Asymptomatic	MET	-	Pain, ROM	MET is effective in ROM of chronic & acute LBP
17	C. Velappanchavadi, et.al ⁴³	2019 & Int J Physiother Res	Comparative study	30	Piriformis syndrome	MET, SWD, Static stretch	-	VAS, LEFS	MET with SWD is more effective in piriformis syndrome
18	Sreenivasu Kotagiri, et.al ²⁷	2019 & IAIM	RCT	60	Frozen shoulder	MET, Maitland technique	-	VAS, SPADI, Goniometry	MET is more improvement
19	Rasheedah Adebola Zibiri, et.al ²⁸	2019 & MEJRH	RCT	35	Non specific Chronic neck pain	MET, IRR, NSE, NCE	-	NPRS, NDI, HADS, ISI	Neck stabilization exercise is more effect than MET
20	Muhamamd Osama, et.al ³¹	2020 & Journal of Pakistan	Pilot study	12	MNP	MET, Facet mobilizati	-	NDI, X-Ray, ROM, MS	Post treatment outcome

		Medical Association				on		D	showed more effective with both technique
21	Eenal Jain, et.al ¹¹	2020 & IJAR	Comparative study	48	Chronic LBP with Piriformis Syndrome	MET, Neural tissue mobilization, Conventional therapy	-	VAS,MMT,ROM	Neural tissue mobilization is more effective than MET when compared
22	Deshmukh MK, et.al. ⁴⁴	2020 & JEMDS	RCT	60	Chronic LBP with radiation	Hot pack, Exercises, MET	-	VAS,SLR,ODI,ROM	MET gave immediate relief
23	Syeda Nida Gillani, et.al ³⁰	2020 & Journal of the Pakistan Medical Association	RCT	40	Cervical dysfunction in Upper cross syndrome	MET, Static stretch	-	VAS, NDI	Both has equal effectiveness
24	Arif Ali Rana, et.al ²⁹	2020 & Rawal Medical Journal	RCT	60	Upper cross syndrome	MET, Conventional Therapy	-	VAS, NDI	MET superior in decreasing pain & disability
25	Deepak Jain, et.al ³²	2021 & JPRI	Interventional Research protocol	50	Chronic neck pain	MET, Motor Control exercises	-	VAS, NDI, MMT, CROM	Post effective treatment is significant in both technique
26	Anju Harry, et.al ³³	2021 & IJRR	pre-test and post-test Experimental study	30	Hamstring Flexibility in high school level Kabaddi player	MET, Conventional flexibility exercise	-	Flexometer test, AKE test	MET is effect on field before sports events
27	Ayesha Majeed, et.al ⁴⁴	2021 & Foundation University Journal of Rehabilitation sciences	RCT	50	Hamstring tightness in asymptomatic females	Hamstring static stretch, AI-MET	-	BMI, SLR, Sit& Reach test, 90-90 test	AI-MET is better than static stretch
28	Silvia Sbardella, et.al ³⁴	2021 & MDPI	Systematic Reviews and Meta-Analyses (PRISMA)	21 studies	Acute-Chronic Non specific Neck pain	MET	-	Pain, upper trapezius trigger point	MET with conventional/manual therapy found effective

29	Nawal Mulla, et.al ³⁵	2021& IJHSR	RCT	60	Upper trapezius tenderness in non-specific neck pain	Strain counterstrain, MET	-	VAS, Pain pressure sensitivity	Both are equally effective
30	Shivani Thakur, et.al ³⁶	2021 & Glocal Journal of Science and Technology	Experimental study	40	Non-specific neck pain	AI-MET,RI-MET,IFT	-	VAS, Northwick park neck pain questionnaire	AI-MET with IFT is more effective
31	Mahrukh Siddiqui, et.al ⁴⁰	2022 & BMC	RCT	80	MNP	AI-MET,RI-MET	--	VAS,ROM,NDI	AI-MET is more beneficial than RI-MET
32	Zainab Khalid Khan, et.al ³⁸	2022& BMC	RCT	60	Non-specific Neck pain	PIR, Myofascial release	-	VAS, NDI, Goniometry, WHO BRER QoL-100	PIR is more effective in reducing pain, restore ROM & improve QoL
33	Reema Joshi, et.al ³⁷	2022 & IJTMB	RCT	50	Non-specific chronic neck pain having forward head posture	MET, Posture Correction Exercise, Neck ROM	-	NPRS, NDI, MB Ruler	Combined effects of MET & Posture correction exercise in neck ROM
34	Muhammad samiullah, et.al ³⁹	2022 & JRCRS	Quasi-experimental study	46	MNP	Routine physical therapy, MET	-	VAS, NDI	MET with routine physical therapy is effective

[Table/Fig-2]: Study treatment protocol and results included in this review . MSDs: Musculoskeletal Disorders; ILO: International Labour Organization; WHO: World Health Organization; EMG: Electromyography; OWAS: Ovako Working Posture Analysis System; RULA: Rapid Upper Limb Assessment; MET: Muscle Energy Technique; LBP: Low Back Pain; Q angle: Quadriceps Angle; ROM: Range of Motion; RCT: Randomized Control Trial; CROM: Cervical Range of Motion; VAS: Visual Analog Scale; NDI: Neck Disability Index; PI-MET: Post Isometric – Muscle Energy Technique; RI-MET: Reciprocal-Muscle Energy Technique; PIRT: Post Isometric Relaxation Technique; US: Ultrasound; OA Knee: Osteoarthritis Knee ; RI: Reciprocal Inhibition; IFT: Interferential Therapy; PIR: Post Isometric Relaxation; MNP: Mechanical Neck Pain; MRI: Magnetic Resonance Imaging; MTP: Mechanical Trigger Point; IC&DN: Ischemic Compression & Dry Needling; SWD: Short Wave Diathermy; LEFS: Lower Extremity Function Scale; SPADI: Shoulder Pain and Disability Index; NPRS: Numerical Pain Rating Scale; IRR: Infrared Radiation; MMT: Manual Muscle Testing; SLR: Straight Leg Raise; ODI: Oswestry Disability Index

IV. RESULT:

Of the 34 articles, 23 articles showed that AI-MET (PIR) was more effective than the compared techniques, and 10 articles indicated that AI-MET was better than manual therapy or routine physical therapy. , and one article showed that AI-MET was ineffective.

V. DISCUSSION:

In this review, 18 of his RCTs, 7 experiments, 6 comparisons, 2 quasi-experiments, 2 systemic analyses, 1 quantitative analysis, 1 pilot study and 1 intervention We had a research protocol. The total number of samples including studies was 1468. The results of the study were promising. Of the 34 articles, 23 showed that AI-MET (PIR) was more effective than the compared techniques, and 10 articles showed that AI-MET was combined with manual therapy or routine physical therapy. was effective, and one article showed that AI-MET was ineffective. MET was administered in addition to other treatments, so we were unable to assess specific responses. Twenty-three studies concluded that MET is superior to placebo treatment for a variety of musculoskeletal disorders. I didn't see any difference. Of the 18 RCTs, 17 had no control group. However, different types of medical conditions are treated by MET. Evidence is needed to demonstrate their effectiveness. Therefore, the experimental studies in this review may serve as a starting point for further research. RCTs with follow-up, double-blind, and objective outcome measures can be classified as high-quality studies according to the CEBM. These studies show mixed results. Only a few articles showed that MET was superior to other treatments, while the rest showed that other treatments were equally effective for this particular condition. Some articles contain only pre- and post-treatment measurements and no follow-up studies, making it impossible to comment on long-term effects. It indicates that more research is needed to make a judgment. Although not statistically significant, all studies showed that MET did indeed have beneficial effects. To achieve high scores in the PEDro scale, a random sampling technique with blinding of participants and assessor could be done with repeated post-test measurements and follow-up treatment. A control group can be compared to his MET along with other evidence-based treatments.

VI. CONCLUSION:

This literature review analyzed the effects of MET on MSD. A wide range of reviews used indicates that AI-MET may be a therapeutic option for MSDs, and it is of utmost importance to obtain evidence to support this. The guidelines given in this review will also help to achieve better quality results and determine the true efficacy of AI-MET as a treatment for musculoskeletal disorders.

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