



## Effectiveness Of Innovative Approach Of Ergon® IASTM Technique In Musculoskeletal Disorder: A Systemic Review

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### Abstract

**Introduction:** One of the most popular IASTM methods, the Ergon® IASTM Technique, combines both passive and active soft tissue manipulation with specific clinical tools in order to treat soft tissue constraints and enhance tissue flexibility, joint range of motion, and patient functionality. There is some evidence to suggest that the approach may help with fascia mobilization, the breakdown and absorption of scar tissue, and enhanced tissue repair. There are currently no systematic reviews that have looked precisely at how Ergon® IASTM affects musculoskeletal disorders.

**Methods:** An overview analysis was done. The databases and search engines used to compile this data include PubMed, Google Scholar, and Research Portal. On the reference list of the included studies, a manual search was conducted. Individually or in combination, the search phrases included instrument, assisted, augmented, soft-tissue, mobilization, Ergon, and technique. Studies were chosen based on inclusion criteria evaluated using the PEDro Rating Scale. The potential of bias was examined within 20 research.

**Results:** It is found that implementation of Ergon® IASTM leads to positive improvement in various musculoskeletal pain.

**Conclusions:** This summary of the systematic review provides the comprehensive systematic synthesis of evidence regarding the impact of Ergon IASTM technique on reducing symptoms of musculoskeletal pain. The findings from this review provide supervision to clinicians and researchers for evidence-based selection of **ERGON®** IASTM for treating various condition.

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**Keywords:** Ergon Technique, IASTM, Graston technique, musculoskeletal condition and soft tissue release.

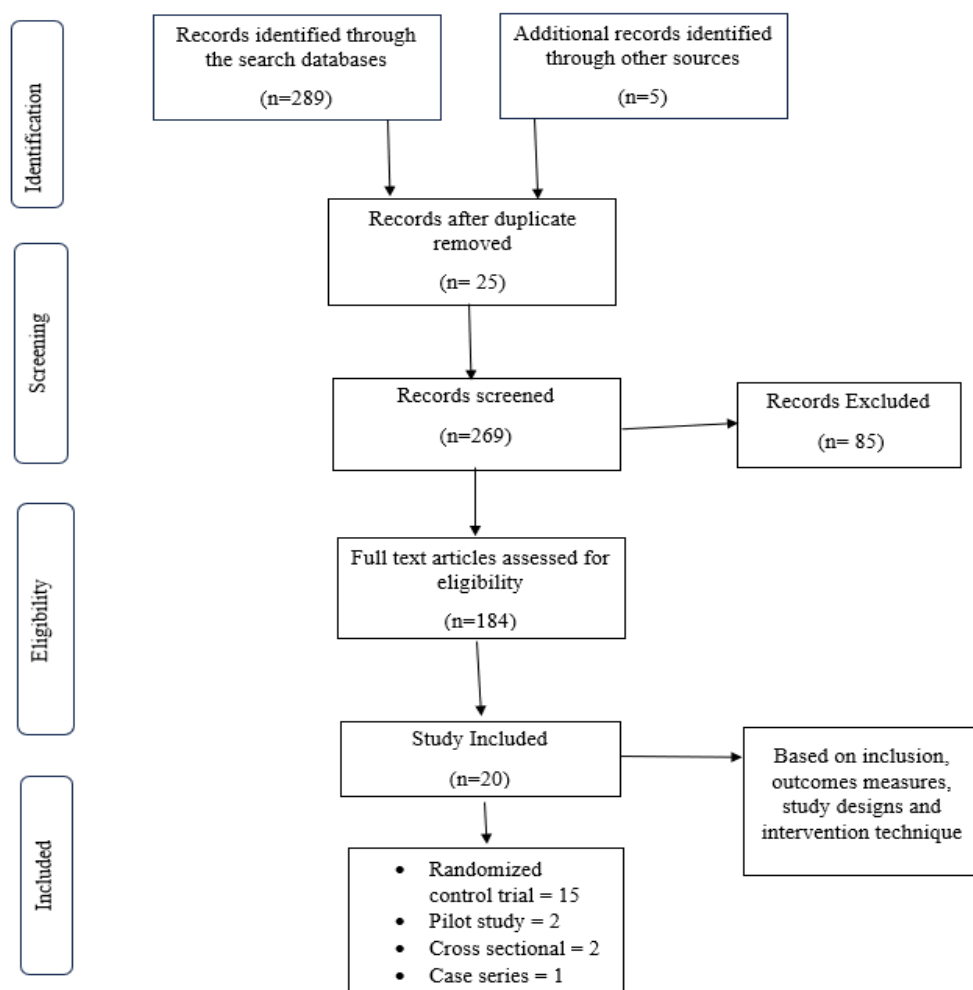
## Background

Instrument-Assisted Soft-Tissue Mobilization (IASTM), a manual therapy method locates and treats soft tissue problems by using rigid tools of various forms and materials. IASTM has been practiced in various forms and with various materials since antiquity, but it has recently had a resurgence in popularity with the introduction of the ERGON Technique® and the use of stainless-steel instruments. One of the most popular IASTM methods, the Ergon® IASTM Technique, combines both passive and active soft tissue manipulation with specific clinical tools in order to treat soft tissue constraints and enhance tissue flexibility, joint range of motion, and patient functionality. (Fousekis et al., 2019). Modern therapeutic methods for treating skeletal and neuromuscular disorders are combined with manipulations of the body's soft tissues in both static and dynamic ways in the ERGON® technique. The word "ergon" originates from the Greek language and means "result of human work, be it manual or cerebral, scientific or artistic activity," which is where the name of the technique derives from. In order to affect the underlying connective tissues, muscles, and nerves, ERGON IASTM is often done by stroking the beveled edge of an instrument on the skin's surface, frequently with the help of lubricant. According to reports, Ergon reduces compressive stresses on the interphalangeal joints of the clinician's hands while increasing vibration sensibility to detect changing tissue qualities. Although the Ergon IASTM's therapeutic mechanism is not fully understood, there is some evidence that the treatment may support enhanced tissue healing, scar tissue breakdown and absorption, and fascia mobilization. It has been believed that Ergon IASTM stimulates mechanosensitive neurons found in the treated soft tissues, such as skin, muscle, and joint capsule, to help reduce pain. The flexibility of the connective and muscle tissue is restored, as well as the release of cross-links between connective tissues and stimulation of anabolic processes in connective tissues. Additionally, it improves blood flow and circulation and allows reflex modifications in enduring sick muscle activation patterns. Mast cells and fibroblasts perform better when using an ergon instrument (Cheatham et al., 2016).

Musculoskeletal Disorders (MSDs) are a group of agonizing ailments that affect the muscles, tendons, ligaments, and nerves and are brought on by strenuous exercise and gradually get worse over time. These conditions are brought on by frequent or regular occupational responsibilities that necessitate for abnormal postures and can be painful while working or at rest (Valachi et al. 2003). The symptoms of musculoskeletal disorders are brought on by repetitive movements, poor posture, and/or external force. MSDs reduce an individual's quality of life, productivity, and ability to perform their job (Rim Suh et al., 2015). The physiology supporting this is that due to prolonged sustained posture, there is muscle fatigue or muscle imbalance, which contributes to muscle ischemia, trigger points, and muscle substitution causing pain, which will result in protective muscle contraction, joint hypo-mobility, and nerve compression, which will ultimately lead to musculoskeletal disorders (Valachi et al.2003).

**ERGON® IASTM** is an upcoming technique in rehabilitation pf musculoskeletal disorder.

The effects of the Ergon IASTM approach have not yet been subjected to a systematic review. This systematic review aims to determine the efficacy of Ergon IASTM in treating soft tissue constraints, lowering pain, improving tissue flexibility, joint range of motion, and improving patient functionality in the treatment of musculoskeletal diseases.

**Fig. 1.** Flow chart showing identification and selection of trials

## Methodology

### Eligibility Criteria

The inclusion of studies was focused on the researches which are consisting of real data and original results. However, this review was broadened to include research including cross-sectional studies, pilot studies, and case series in order to better present the state of the available evidence because an appropriate number of RCTs were not readily available. The Population, Intervention, Comparison, and Outcome (PICO) framework was used in conjunction with the appropriate search terminology in the development search approach [Table 2]. Included research was published in 2010 to 2023. Studies were conducted in various geographic locations including Greece, Korea, China, USA, Bulgaria, Egypt, Lahore, London, Pennsylvania, Deland published in the English language Studies including 746 subjects, Age <60years (range according to all article minimum to maximum), involving both gender who are working as well as student, patients and athletes.

**Table 1:** Inclusion Criteria of the Review study

Sr. No.	Variables of Consideration	Criteria
1.	Age	<60
2.	Gender	Both
3.	Working history	Yes
4.	Population	Students, athletes, general, patients
5.	Population or Respondents	746

### Search strategy

The published databases were searched electronically on web sciences such as Pub Med, Pedro, Scopus and the various search engines such as research gate with the following: “Ergon technique”, “IASTM”, “Graston technique”, “Musculoskeletal condition”, “Soft tissue release”. The full description of articles was exported to

end note to allow for exclusion of duplicates and assessment of titles and abstract of articles. The articles were from worldwide population.

### Data collection and analysis

#### Studies selection:

In order to retrieve the data to be screened, 25 duplicates out of the total (289) records found were eliminated by determining whether the publication used the same procedure or produced the same results. One reviewer examined the titles and abstracts of 269 records before screening them. 85 were excluded from the 269 that were found to be relevant. Twenty were chosen based on the pre-established eligibility criteria for study characteristics and quality. These 20 articles' references list was personally checked by the author for any relevant literature. (Fig :1)

#### Data extraction

The extraction of data was done. It was conducted utilizing the trial's characteristics (country of conduct, year of conduct, design, duration), the participants' characteristics (age, gender), and the intervention's (type, duration, exercise dose, follow-up, safety). The data within the writing have been removed if they were unclear or insufficient.

#### Quality assessment of trials

To assess the methodological quality of the evidence they had retrieved, the authors used an 11-point PEDro scale designed to assess the quality of RCTs on the Physiotherapy Evidence Database. This scale was based on an original list produced by Verhagen et al. using the Delphi consensus method. The caliber of the trials was assessed independently. Each criterion was given a yes or a no score (score = 1 or 0), in order to eliminate the possibility of ambiguous responses. A total score was assigned to the methodological merit of each included study after summing together all the responses (up to a maximum score of 10). Studies were assessed as poor (score of 4), fair (score of 4 or 5), good (score of 6-8), and excellent (scoring 8 or higher) based on the total evaluations received.

**Table 2:** Various researches considered for article on ERGON® IASTM

Sr. No.	Author (Year & Place)	Title	Study Design	Population	Outcome	Control group	Intervention group
1.	Fousekis et al, 2016 (Greece)	The Effectiveness of Instrument-assisted Soft Tissue Mobilization Technique (Ergon® Technique), Cupping and Ischemic Pressure Techniques in the Treatment of Amateur Athletes' Myofascial Trigger Points	Randomized controlled clinical trial	70 male amateur soccer athletes	Pain Pressure threshold (PPT) and Visual Analogue Scale (VAS)	Traditional method	*Ischemic compression *Ergon® IASTM therapy. *Cupping therapy
2.	Fousekis et al, 2019 (Greece)	Can the application of the Ergon® IASTM treatment on	A randomized control study	60 University students	hamstrings flexibility (SLR). The hip flexion angle (ROM)	Myofascial release	Ergon IASTM

		remote parts of the superficial back myofascial line be equally effective with the local application for the improvement of the hamstrings' flexibility?					
3.	Zaghloul et al, 2022 Egypt	Comparison between upper thoracic spine mobilization and the Ergon technique in the treatment of mechanical neck pain	Randomized controlled clinical trial	30 mechanical neck pain (general population)	numeric pain rating scale (NPRS), cervical range of motion and neck disability index (NDI)	upper thoracic spine mobilization	Ergon IASTM
4.	Maniatakis et al 2020 (Greece)	The effectiveness of Ergon Instrument-Assisted Soft Tissue Mobilization, foam rolling, and athletic elastic taping in improving volleyball players' shoulder range of motion and throwing performance : a pilot study on elite athletes	pilot study	15 elite volleyball players	flexion, internal, and external shoulder ROM measurements with a goniometer and shoulder function evaluations using the Functional Throwing Performance Index (FTPI) and the one-arm seated shot-put performance test (OSP).	Athletic taping	IASTM and form rolling
5.	Kim et al 2021 (Korea)	The Effects of IASTM Using Vibration Stimulation on Shoulder Muscle Activity, Flexibility and Pain of Chronic	A randomized control study	20 chronic shoulder pain	muscle activity, flexibility, and pain	general IASTM	vibration stimulus for IASTM

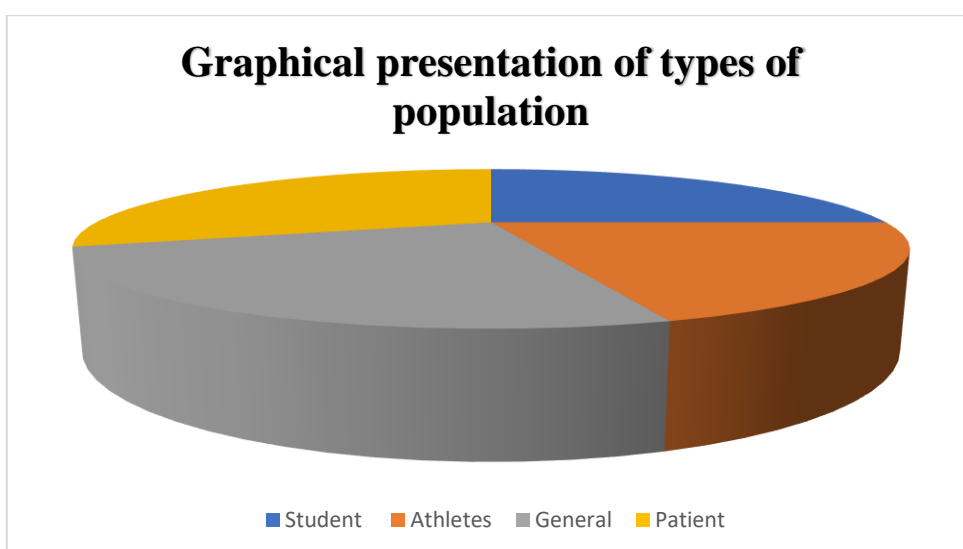
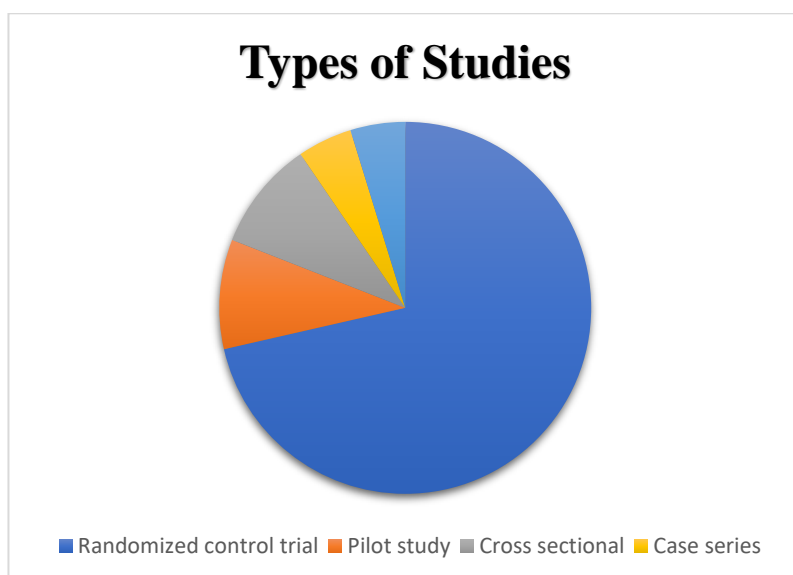
		Shoulder Pain Patients					
6.	Nikolaev et al 2021 (Bulgaria)	Effect of Ergon IASTM technique on range of motion in patients with bimalleolar fracture	Pilot Study	17 bimalleolar fracture in subacute postoperative period	range of motion of ankle	Routine kinesitherapy	kinesitherapy and Ergon IASTM
7.	Simatou et al 2020 (Greece)	Effects of the Ergon® instrument-assisted soft tissue mobilization technique (IASTM), foam rolling, and static stretching application to different parts of the myofascial lateral line on hip joint flexibility	A randomized control study	30 university students	hip adduction range of motion (ROM)	control	Ergon® instrument-assisted soft tissue mobilization (IASTM) treatment, foam rolling, and static stretching
8.	Kazakos et al 2020 (Greece)	Treatment of scalene muscles with the Ergon technique can lead to greater improvement in hip abduction range of motion than local hip adductor treatment: a study on deep front line connectivity	randomized control study	40 healthy adults	upper and lower midpoints of the Deep Front Line (DFL) on hip abduction range of motion (ROM).	Control	Ergon
9.	Nadeem et al 2023 (Lahore)	Effect of IASTM ergon technique on pain, strength and range of motion in plantar fasciitis patients.	randomized control trial	64 patients with plantar fasciitis	(VAS) for pain, manual muscle test (MMT) for strength and range of motion (ROM) by goniometer.	ultrasound therapy, stretching strengthening exercises and cryotherapy	Ergon IASTM
10. 10)	Zlatkov et al 2021 (Bulgaria)	Monitoring the effect of	Cross Sectional		Anthropometric	manual-manipulative techniques	ERGON IASTM technique

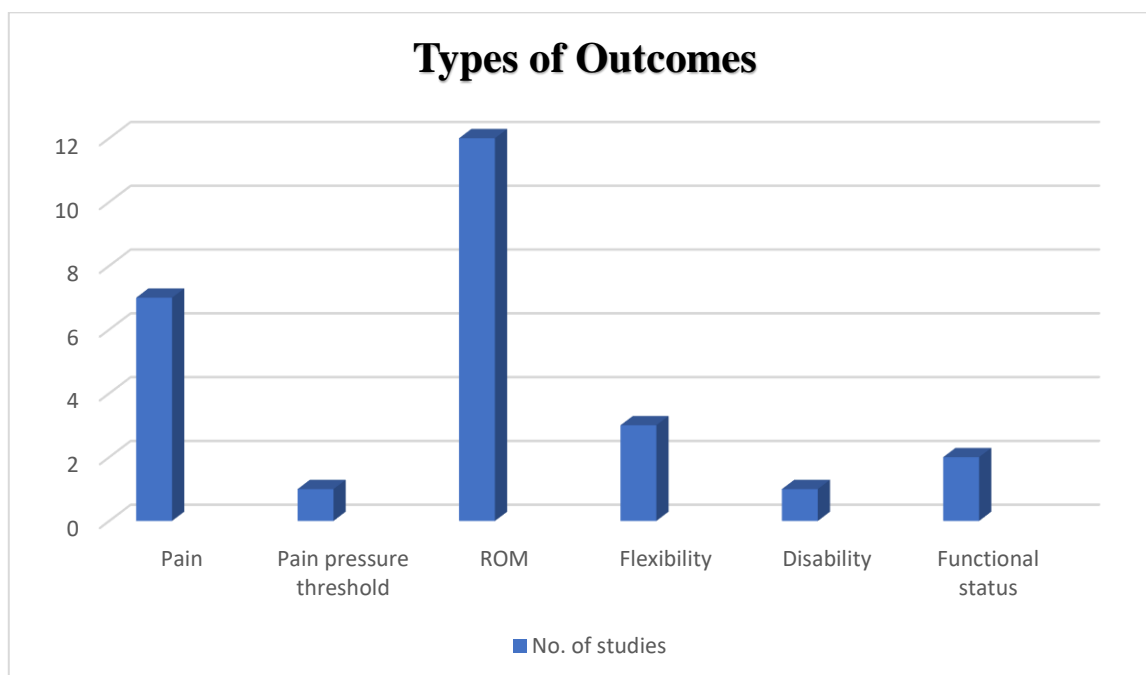
		the ERGON IASTM technique in patients with lumbar disc herniation	Survey study	36 lumbar disc herniation	measurements , Questionnaire survey, Assessment of pain, Lumbar disc herniation test, Straight leg raise test	and trigger points to relax the muscles	
11.	Nazari et al 2019 (London)	The Effectiveness of Instrument-Assisted Soft Tissue Mobilization in Athletes, Participants Without Extremity or Spinal Conditions, and Individuals with Upper Extremity, Lower Extremity, and Spinal Conditions	Randomized control trial	43 Athletes	Function, pain, range of motion, grip strength)	placebo or sham, or control (no treatment)	IASTM
12.	Fousekis et al 2020 (Greece)	Effects of instrument-assisted soft-tissue mobilization at three different application angles on hamstring surface thermal responses	randomized control trial	30 university students	hamstrings at different angles (60 and 90)	control	Ergon technique
13.	Kwan et al., 2010 (China)	The effect of aging on the biomechanical properties of plantar soft tissues	Cross sectional study	60 healthy volunteers	Stiffness of plantar soft tissues; Thickness of plantar soft tissues; Correlation between age and the stiffness of the plantar soft tissue	NA	NA
14.	Laudner et al., 2014 (USA)	Acute effects of instrument assisted soft tissue mobilization for	randomized control trial	35 collegiate baseball players	passive GH internal rotation ROM and horizontal adduction ROM	No treatment served as control	IASTM treatment

		improving posterior shoulder range of motion in collegiate baseball players					
15.	Lee et al., 2016 (Korea)	The effect of Graston technique on the pain and range of motion in patients with chronic low back pain	randomized control trial	30 patients with CLBP	Pain, lumbar ROM,	General exercise was applied with stretching exercises and stationary bicycling	Graston technique
16.	STROINEY et al., 2020 (Pennsylvania)	Examination of self-myofascial release vs. Instrument-assisted soft-tissue mobilization techniques on vertical and horizontal power in recreational athletes	randomized control design	Forty-nine college students	Pain, ROM	Self-myofascial release	IASTM treatment
17.	Stanek et al., 2018 (Deland)	Comparison of Compressive Myofascial Release and the Graston Technique for Improving Ankle Dorsiflexion Range of Motion	Randomized controlled trial	44 physically active people	ankle-DF ROM	compressive myofascial release (CMR)	IASTM using the Graston Technique (GT)
18.	Lee et al., 2014 (South Korea)	Inhibitory effects of instrument-assisted neuro-mobilization on hyperactive gastrocnemius in a hemiparetic stroke patient	Case study	22-year-old male of acute ischemic stroke	muscle weakness on the right upper and lower extremities and hypertonicity on biceps and GCM muscles		instrument-Assisted Neuro-mobilization (IASTM)
19.	Subeva et al., 2023 (Bulgaria)	Effect of ergon iastm edema reduction	Randomized control trial	24 patients with X-ray stage II and III arthritic	arthritic changes in the knee joint	electrotherapy - low-frequency magnetic	Ergon Technique



		technique in knee osteoarthritis patients		changes in the knee joint		pulse; ultrasound therapy, cryotherapy	
20.	Gunn et al., 2018 (USA)	Instrument-assisted soft tissue mobilization and proprioceptive neuromuscular facilitation techniques improve hamstring flexibility better than static stretching alone	randomized clinical trial	Forty-eight university students	hip flexion was measured bilaterally with an active straight leg raise (ASLR)	PNF	IASTM study

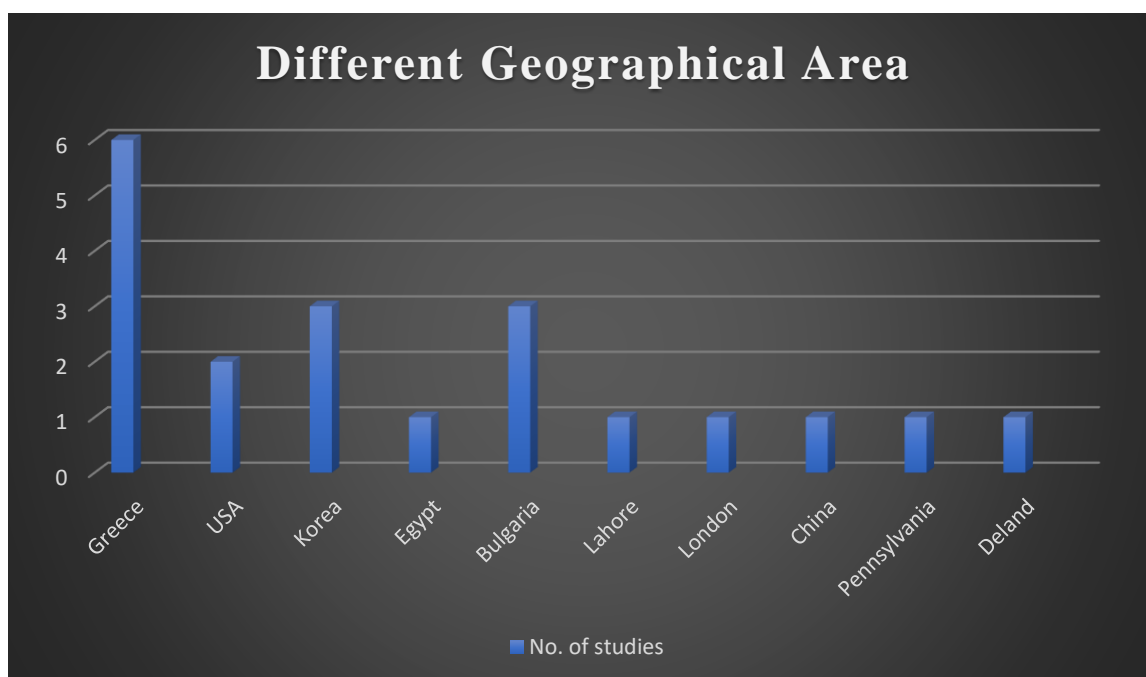




## Results

### Study characteristics:

Data extraction shows overview of all the studies included for the systematic review. Studies 6 from Greece, 2 from USA, 3 from Korea, 1 from Egypt, 3 from Bulgaria, 1 from Lahore, 1 from London, 1 from China, 1 from Pennsylvania and 1 from Deland were included. All the studies were published in the year ranging from 2010 to 2023.



### Characteristics of Ergon technique

The ERGON® technique is a cutting-edge therapy approach that combines approaches to addressing skeletal and neuromuscular conditions with manipulations of the body's soft tissues in both static and dynamic ways. ERGON® IASTM Technique is to achieve both short- and long-term therapeutic adaptations, such as: - "Release" of cross-links between connective tissues and stimulation of anabolic processes in connective tissues, the flexibility of the connective and muscle tissue is restored, facilitating reflex alterations in persistent diseased muscle activation patterns, improving neuromuscular control and the myotatic reflex, stimulation of the healing processes by enhancing blood supply and circulation, a rise in cellular activity, particularly that of mast cells

Available online at: <https://jazindia.com>

and fibroblasts, pain and muscular spasm reduction via neurophysiological adjustments, by eliminating fascial constraints and adhesions, the biomechanical function of the joints is reestablished. It has been seen that treatment with traditional physiotherapy approach has shown decrease in symptoms of plantar fasciitis. But the implementation of ERGON® IASTM technique have shown better results when compared with treatment protocol in terms of reducing pain threshold, reducing spasm, increasing tissue flexibility, reducing joint stiffness, increasing joint range of motion and strain.

### Results of individual studies

Results of twenty included studies in the systematic review are described in Table 3. In this systematic review almost in all the studies is the most concerning domain for musculoskeletal pain evaluated Quality of life (QOL), Range of motion (ROM), Pain, Pain pressure threshold (PPT), Flexibility, Disability before and after the rehabilitation which is screened evaluating the Ergon result.

**Table 3:** Results of Various researches considered for article on ERGON® IASTM

Sr. No.	Author (Year & Place)	Sample size	Study design	Outcome	Invention	Results	Main finding
1)	Fousekis et al, 2016 (Greece)	70	Randomized controlled clinical trial	Pain Pressure threshold (PPT) and Visual Analogue Scale (VAS)	*Ischemic compression *Ergon® IASTM therapy. *Cupping therapy	The Ergon®-IASTM Technique produced a significantly larger effect ( $p < 0.001$ ) in the reduction of pain and PPT during compression of MtrPs compared with cupping and ischemic pressure technique. These therapeutic adaptations after Ergon®-IASTM Technique application were evident even from the first treatment ( $p < 0.001$ ).	Decrease in PPT and pain
2)	Fousekis et al, 2019 (Greece)	60	A randomized control study	hamstrings flexibility (SLR). The hip flexion angle (ROM)	Ergon IASTM	Application of Ergon Technique of either the upper or lower part of the SBL may lead to a significant increase in the hamstring flexibility irrespective of the site of application.	Increase flexibility and ROM
3)	Zaghloul et al, 2022 Egypt	30	Randomized controlled clinical trial	numeric pain rating scale (NPRS), cervical range of motion and neck disability index (NDI)	Ergon IASTM	The Ergon Technique group had significantly better results in terms of improvement of neck pain and reduction in	Decrease in pain and improved ROM

						functional disability	
4)	Maniatakis et al 2020 (Greece)	15	pilot study	flexion, internal, and external shoulder ROM measurements with a goniometer and shoulder function evaluations using the Functional Throwing Performance Index (FTPI) and the one-arm seated shot-put performance test (OSP).	IASTM and foam rolling	Ergon IASTM technique resulted in significantly higher shoulder flexion ROM values than foam rolling and elastic taping.	Improved ROM
5)	Kim et al 2021 (Korea)	20	A randomized control study	muscle activity, flexibility, and pain	vibration stimulus for IASTM	Significant differences in muscle activity, flexibility, and pain in both groups before and after the experiment (p<0.05).	Improved muscle activity, flexibility and decrease in pain.
6)	Nikolaev et al 2021 (Bulgaria)	17	Pilot Study	range of motion of ankle	kinesitherapy and Ergon IASTM	Better initial results of the patients in the experimental group, we found that IASTM had a better effect in restoring the ankle range of motion of patients with bimalleolar fracture of the ankle joint, compared with convection kinesitherapy administered in the control group.	Improved ROM
7)	Simatou et al 2020 (Greece)	30	A randomized control study	hip adduction range of motion (ROM)	Ergon® instrument-assisted soft tissue mobilization (IASTM) treatment, foam rolling, and static stretching	The findings suggest that the implementation of Ergon IASTM, foam rolling, and stretching can produce positive effects on the hip ROM. The Ergon Technique is more effective compared to foam rolling and	Improved ROM

						stretching, irrespective of the application site	
8)	Kazakos et al 2020 (Greece)	40	randomized control study	upper and lower midpoints of the Deep Front Line (DFL) on hip abduction range of motion (ROM).	Ergon	The application of the Ergon technique on remote parts of the DFL may lead to a significant increase in hip abduction ROM compared to local hip adductors treatment.	Improved ROM
9)	Nadeem et al 2023 (Lahore)	64	randomized control trial	(VAS) for pain, manual muscle test (MMT) for strength and range of motion (ROM) by goniometer.	Ergon IASTM	Instrument-assisted soft tissue mobilization using the Ergon Technique for plantar fasciitis lasting 5 weeks is an effective treatment intervention in reducing pain and improving strength and ankle range of motion.	Decrease in pain and improved muscle strength and ROM
10)	Zlatkov et al 2021 (Bulgaria)	36	Cross Sectional Survey study	Anthropometric measurements, Questionnaire survey, Assessment of pain, Lumbar disc herniation test, Straight leg raise test	ERGON IASTM technique	This study demonstrated the effectiveness of the Ergon technique in patients with lumbar disc herniation. In conclusion, after two weeks of therapy with the Ergon technique, the pain symptoms were affected and the functional capabilities of affected people improved	Improved result
11)	Nazari et al 2019 (London)	43	randomized control trial	Function, pain, range of motion, grip strength	IASTM	The current evidence does not support the use of IASTM to improve pain, function, or range of motion in individuals without extremity or spinal	Increased function, grip strength, ROM and decreased pain

						conditions or those with varied pathologies	
12)	Fousekis et al 2020 (Greece)	30	randomized control trial	hamstrings at different angles (60 and 90)	Ergon technique	IASTM resulted in a significant increase in skin temperature irrespective of the application angle. The thermal retention rate produced by the treatment at a 90° angle was significantly higher than that produced by the 20° application angle	Improved result at 90 angles
13)	Kwan et al., 2010 (China)	60	Cross sectional study	Stiffness of plantar soft tissues; Thickness of plantar soft tissues; Correlation between age and the stiffness of the plantar soft tissue	NA	Descriptive statistics on the height, weight, and body mass index of different age groups. No statistical difference in any of these demographic characteristics was found among the groups	NA
14)	Laudner et al., 2014 (USA)	35	randomized control trial	passive GH internal rotation ROM and horizontal adduction ROM	IASTM treatment	The results of this study indicate that an application of IASTM to the posterior shoulder provides acute improvements in both GH horizontal adduction ROM and internal rotation ROM among baseball players.	Increased ROM
15)	Lee at el., 2016 (Korea)	30	randomized control trial	Pain, lumbar ROM,	Graston technique	A post hoc paired t-test showed that pain decreased significantly postintervention within the Graston group. The lumbar ROM significantly increased post-intervention in both group	Decreased in pain and improved ROM

16)	STROINEY et al., 2020 (Pennsylvania)	49	randomized control design	Pain, ROM	IASTM treatment	IASTM was not perceived to be more painful than SMR. Self-myofascial release and IASTM did not enhance sprinting performance in this study.	No significant difference found
17)	Stanek et al., 2018 (Deland)	44	Randomized controlled trial	ankle-DF ROM	IASTM using the Graston Technique (GT)	Post hoc testing showed DF improvements in the standing position after CMR compared with the GT and control groups (both P $\frac{1}{4}$ .001). In the kneeling position, DF improved after CMR compared with the control group (P $\frac{1}{4}$ .005)	Increased ROM
18)	Lee et al.,2014 (South Korea)	22	Case study	muscle weakness on the right upper and lower extremities and hypertonicity on biceps and GCM muscles	instrument-Assisted Neuro-mobilization (IASTM)	The neuro-mobilization technique using IASTM showed a promising improvement of neuromuscular imbalance between TA and GCM activations, which can increase gait performance in a stroke case.	Improved outcome
19)	Subeva et al., 2023 (Bulgaria)	24	Randomized control trial	arthritic changes in the knee joint	Ergon Technique	The methodology applied in the experimental group is more effective than the one applied in the control group, because it leads to a reduction of swelling in the area of the knee joint	Reduction of swelling
20)	Gunn et al., 2018 (USA)	48	randomized clinical trial	hip flexion was measured bilaterally with an active straight leg raise (ASLR)	IASTM study	Hip flexion measures showed good reliability in both studies (intraclass correlation coefficient = 0.97) with a minimal detectable change of $<$ 0.05).	Both the group have showed the similar results

														Follow-up analyses revealed PNF and IASTM interventions resulted in greater increases in hip flexion range than static stretching.	
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This review was to deliberate the effectiveness of innovative approach ERGON® IASTM in musculoskeletal condition. When the review was done, it was found that maximum of studies including the supreme population which were students, general and the athlete’s participants with the total respondents 746. It has been seen that implementation of ERGON® IASTM technique have shown better results when compared with treatment protocol in terms of reducing pain, reducing pain pressure threshold, reducing spasm, increasing tissue flexibility, reducing joint stiffness, increasing joint range of motion and strain. **ERGON® IASTM** is an upcoming technique which have shown better outcome in treating various musculoskeletal pain.

#### Quality evaluation of the trials.

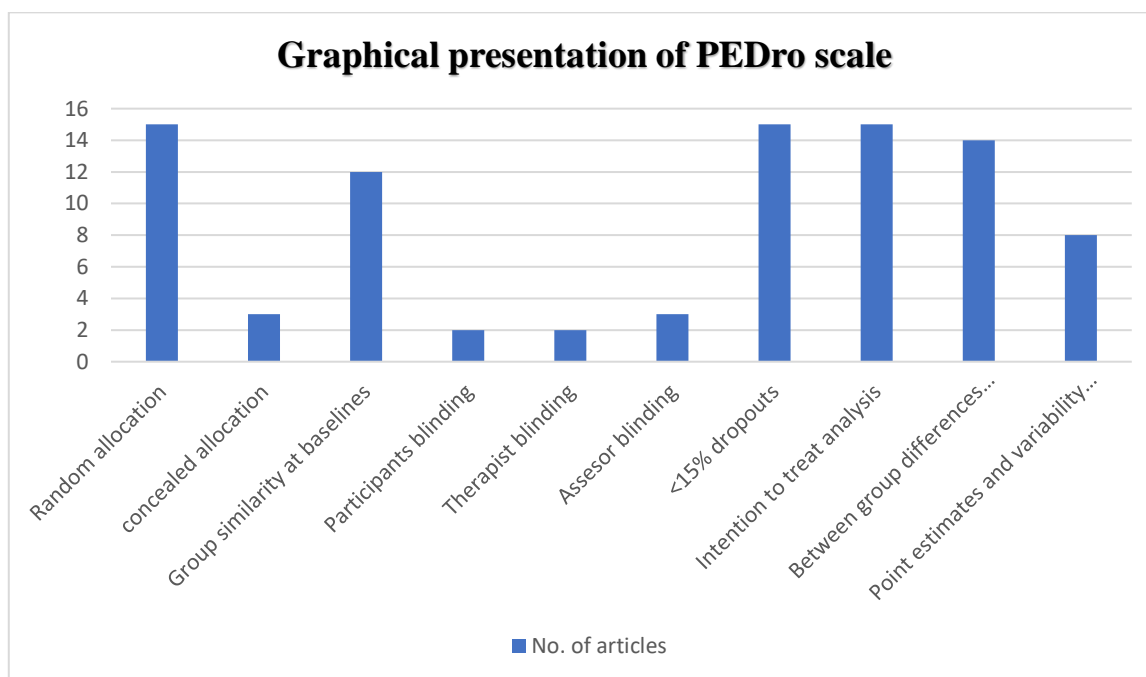
For all of the trials, the average PEDro rating was 3/10 (poor quality). One trial got a rating of 3/10, five received a 5/10, three scored a 6/10, five received a 7/10, and one received an 8/10. Furthermore, just a few studies incorporated techniques of randomization and concealed grouping of individuals. The reporting of between-group differences following interventions with point estimations and measures of variability received high marks in all trials.

**Table 4:** Quality scoring of randomized controlled trials (n = 15)

S r n o.	Author s	Rando m Allocation	Conce alled allocat ion	Group Simil arity At baseli ne	Partici pant blindi ng	Thera pist blindi ng	Asse ssor blind ing	<15 % drop outs	Intent ion to treat analy sis	Betwe en group differe nces reporte d	Point estima tes and variab ility report ed	To tal sco re (out of 10)	Qual ity
1	Fouseki s et al, 2016	yes	no	yes	no	yes	no	yes	yes	yes	yes	7	Good
2	Fouseki s et al, 2019	yes	no	yes	no	no	no	yes	yes	yes	no	5	Fair
3	Zaghlo ul et al, 2022	yes	yes	yes	no	no	no	yes	yes	yes	yes	7	Good
4	Kim et al 2021	yes	no	yes	no	no	no	yes	yes	yes	no	5	Fair
5	Simatu u et al 2020	yes	no	no	no	no	no	yes	yes	yes	yes	5	Fair
6	Kazako s et al 2020	yes	yes	yes	no	no	yes	yes	yes	yes	no	7	Good
7	Nadeem et al 2023	yes	yes	yes	no	no	no	yes	yes	yes	yes	7	Good



8	Nazari et al 2019	yes	no	yes	no	no	yes	yes	yes	yes	no	6	Good
9	Fousekis et al 2020	yes	no	no	yes	no	no	yes	yes	yes	yes	6	Good
10	Laudner et al., 2014	yes	no	yes	yes	no	no	yes	yes	yes	yes	7	Good
11	Lee et al., 2016	yes	no	yes	no	no	no	yes	yes	yes	yes	6	Good
12	STROINEY et al., 2020	yes	no	yes	no	no	no	yes	yes	yes	no	5	Fair
13	Stanek et al., 2018	yes	no	yes	no	yes	yes	yes	yes	yes	yes	8	Good
14	Subeva et al., 2023	yes	No	yes	no	no	no	yes	yes	yes	no	5	Fair
15	Gunn et al., 2018	yes	no	no	no	no	no	yes	yes	no	no	3	Poor



## Discussion

This systematic review's goal was to investigate the effectiveness of Ergon IASTM as a treatment for musculoskeletal pain. Ergon IASTM's effectiveness as a treatment for lowering pain thresholds, reducing spasms, enhancing tissue flexibility, lowering joint stiffness, and increasing joint range of motion were the main goals of our review. Twenty studies were included in our review, although they were not directly comparable because of differences in study populations, research designs, and outcome measures. 19 studies reported statistically and clinically significant reductions in pain within the Ergon IASTM groups. However one study did not find any statistical difference between-group. There are several important factors to consider regarding the treatment intervention when interpreting treatment result.

First only 8 study [Fousekis et al.,2016,2019,2020; Maniatakis et al.,2021; Nikolaev et al., 2021; Simator et al., 2020; Kazakos et al., 2020; Nazari et al., 2019] followed the recommended ERGON IASTM treatment protocol which includes the technique of application. Second, some study has compared the ERGON IASTM with other different types of manual treatment. Third, there were problem with heterogeneity of treatment time in the studies. Fourth, some article reported varied treatment time ranges with no clear pattern in result. Fifth, one article has showed no statistical difference between the group result. Results with respect to pain and pain pressure threshold reduction, increased ROM, Flexibility varied among selected studies. Seven of the studies [1,3,5,9,11,15,16] found evidence for pain reduction using Ergon IASTM. One of the studies [1] found evidence for pain pressure threshold reduction. Twelve of the studies [2,4,6,7,8,9,11,14,15,16,17,20] found evidence for improved ROM. Three of the studies [2,5,11] found evidence on increasing flexibility. One of the studies [3] found evidence on decreasing disability. Two of the studies [4,11] has found the evidence of improving functional quality.

[Articles no. is according to the result table]

However, as compared to the recommended course of therapy, using the ERGON® IASTM approach has produced better outcomes in terms of lowering pain threshold, reducing spasm, increasing tissue flexibility, and reducing joint stiffness and strain.

### Strengths and Limitations

This is the only systematic review that has been done so far. which has looked into how ERGON® IASTM treats different musculoskeletal conditions. The decision to only include research published in the English language may be the reason for this systematic review's limitation. The evidence presented in gray literature and other languages may have been rejected by the writers. This systematic review had a number of limitations, notably because there was scant and inconsistent evidence supporting Ergon IASTM. Only 15 RCTs were available, thus this study also included data on studies with other design.

### Conclusions

This summary of the systematic review provides the comprehensive systematic synthesis of evidence regarding the impact of Ergon IASTM technique on reducing symptoms of musculoskeletal pain. The findings from this review provide supervision to clinicians and researchers for evidence-based selection of **ERGON®** IASTM for treating various condition. Altogether in all the outcome measures which set up the criteria, the Ergon technique has covered a wide spectrum of treating various musculoskeletal condition.

### Conflict of interest

Among the authors, there is no conflicting interest.

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