OPEN PEER REVIEW

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What is "Open Peer Review" process?

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Advantages of "Open Peer Review" process

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You can find out more at:
https://brieflands.com/briefland/knowledgebase/category/tree.html#opr.html

Middle East Journal of Rehabilitation and Health Studies
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Peer Review Report for "The Effect of Short-Term Instrument-Assisted Soft Tissue Mobilization on Lower Limb Muscle Strength and Sit-to-Stand Kinetics in Patients with Knee Osteoarthritis: A Randomized Controlled Trial"

Author(s): Zahra Karimi Soloklo, Sahar Boozari, Sedighe Kahrizi

Review Timeline:

Submit Date:	4 Jan 2025
Revised Date:	14 Feb 2025
Accepted Date:	3 Mar 2025

Revision (0)

Here, you can see the **Reviewers**, **Associate Editors** and **EICs'** comments from the beginning to the end of the revision process.

REFEREE : Reviewer

9 Jan 2025

To the Editor
Title: The Impact of Instrument-Assisted Soft Tissue Mobilization on Lower Limb Muscular Strength and Sit-to-Stand Kinetics in Patients with Knee Osteoarthritis: A Randomized Controlled Trial
Journal: Middle East Journal of Rehabilitation and Health Studies
Date: Thursday, January 09, 2025
I have reviewed the manuscript titled above, which investigates the effects of Instrument-Assisted Soft Tissue Mobilization (IASTM) on lower limb muscular strength and sit-to-stand (STS) kinetics in patients with knee osteoarthritis (KOA).

While the study addresses a relevant clinical issue, several significant concerns need to be addressed before the manuscript can be considered for publication.

Major Concerns:

1. Short Intervention Duration:

o The intervention period of two weeks may be insufficient to observe meaningful changes in complex biomechanical tasks such as STS. The authors should discuss the rationale behind this duration and consider whether extending the intervention could lead to more significant findings regarding both muscle strength and STS biomechanics.

2. Limited Biomechanical Analysis:

o Although improvements in muscle strength were noted, there were no significant changes in vertical ground reaction force (vGRF) or center of pressure (COP) parameters during the STS task. This raises questions about the functional relevance of the observed strength gains. The authors should clarify why these biomechanical measures did not show significant changes and discuss how this impacts the overall conclusions of the study.

Minor Comments:

• Clarity and Precision: Some sections of the abstract could benefit from clearer language. For example, when discussing improvements in strength, it would be helpful to specify the magnitude of these improvements.

Reviewer Comments on Specific Sections:

Background Section:

• Clarity and Conciseness: While informative, some sentences are overly complex. Consider simplifying these for better readability.

• Definition of Key Terms: Critical biomechanical parameters such as vGRF and COP should be defined to aid reader comprehension.

Methods Section:

• Sample Size Justification: The rationale for using a medium effect size in sample size calculations should be better justified with context from previous studies.

Discussion and Conclusion Sections:

• Interpretation of Findings: The discussion should explore why strength gains did not lead to functional improvements, considering potential underlying mechanisms or factors influencing this discrepancy.

These comments aim to enhance the clarity, rigor, and overall quality of your manuscript. I appreciate your efforts in conducting this important research and look forward to seeing your revisions.

Best regards

REFEREE : Reviewer

20 Jan 2025

Abstract:

Please summery the background and conclusion part. In the conclusion, please write the most important finding of your study.

Please choose the key words according to the Mesh database.

Using any instrument to facilitate the soft tissue manipulation will be useful because

of decreasing the pain and soft tissue stiffness. Why measuring the kinetic and kinematics parameters after using this instrument is necessary?
Method:

Ho did you manage the ethical problems of Sham group? The participants of sham group imagined that they received the standard and complete treatment.
Please describe more details about IASTM specifications.
Please depict the Consort flowchart of your study

REFEREE : Reviewer

24 Jan 2025

Dear Associate Editor
My comments:
1- Abstract: Mention the specific sample size (30 participants) in the abstract for clarity.
2- Background: Discuss any limitations in existing literature related to IASTM and STS performance.
3- Method: Expand on the justification for the four-session, two-week intervention duration. Why was this timeframe chosen? the intervention period of four sessions over two weeks was relatively short and may not have been sufficient to elicit changes in complex biomechanical outcomes.
4- Method: Include references for the hand-held dynamometer's reliability and validity.
5- Method: Can participants tell the difference between sham and real IASTM?
6- Discussion: Expand on why strength gains in the knee extensors, flexors, and plantar flexors were insufficient to affect STS biomechanics.
7- Discussion: Compare findings with previous studies in discussion.
8- While kinetic parameters (vGRF and COP) were measured, the absence of kinematic (joint angles) and muscle activation (EMG) data limits the understanding of how IASTM affects neuromuscular coordination during STS.
9- The study focuses on objective measures but does not include patient-reported outcomes such as pain, function, or quality of life. According to your previous submission in the Middle East journal "Exploring the Impact of Instrument-Assisted Soft Tissue Mobilization on Functional Measures and Quality of Life in Knee Osteoarthritis Patients: A Randomized Controlled Trial" Both complement each other by addressing different aspects of the therapeutic effects of IASTM in KOA patients.

REFEREE : Associate Editor

25 Jan 2025

Dear EIC
The manuscript requires a major revision.

Fatemeh Ehsani : EIC

27 Jan 2025

Dear Authors

According to the reviewers and associate editor’s comments, your article needs to be revised majorly. When revising your manuscript, please consider all issues mentioned in the reviewers' comments carefully: please outline every change made in response to their comments and submit the required files up two months.

OPEN PEER REVIEW

Revision (1)

Reply to Reviewers

Ideally, the reviewing process can significantly improve the submitted manuscripts by allowing the authors to take into account the advice of reviewers. Author(s) must reply to all reviewers' comments in a separate Word file, point by point. A "**Reply to Reviewers**" document is submitted along with revised manuscript during submission of revised files, summarizing the changes that the authors made in response to the reviewers' comments. The responses to reviewers' comments specifies how the authors addressed each comment the reviewers made.

You can read the authors' responses to the reviewers' comments in the next page.

Dear Reviewers,

We sincerely appreciate the time and effort you have dedicated to reviewing our manuscript. Your invaluable comments and suggestions have significantly strengthened the quality of our work. We have carefully considered each point raised and have provided detailed responses below. All relevant revisions have been highlighted in yellow in the manuscript for your reference.

Sincerely,
The Authors

Reviewer 1:

To the Editor and Authors of the Manuscript:

Title: The Impact of Instrument-Assisted Soft Tissue Mobilization on Lower Limb Muscular Strength and Sit-to-Stand Kinetics in Patients with Knee Osteoarthritis: A Randomized Controlled Trial

Journal: Middle East Journal of Rehabilitation and Health Studies

Date: Thursday, January 09, 2025

I have reviewed the manuscript titled above, which investigates the effects of Instrument-Assisted Soft Tissue Mobilization (IASTM) on lower limb muscular strength and sit-to-stand (STS) kinetics in patients with knee osteoarthritis (KOA). While the study addresses a relevant clinical issue, several significant concerns need to be addressed before the manuscript can be considered for publication.

Response: We appreciate the valuable feedback provided by the reviewer and acknowledge the constructive insights that have helped strengthen our manuscript. Below, we address each comment in detail and outline the corresponding revisions made.

Major Concerns:

1. Short Intervention Duration:

The intervention period of two weeks may be insufficient to observe meaningful changes in complex biomechanical tasks such as STS. The authors should discuss the rationale behind this duration and consider whether extending the intervention could lead to more significant findings regarding both muscle strength and STS biomechanics.

Response: We appreciate this important consideration. The two-week intervention period with four sessions was selected based on prior literature demonstrating the immediate and short-term effects of IASTM on clinical outcomes, including pain and range of motion. These studies suggest that soft tissue mobilization can lead to acute and short-term improvements, supporting our study design. Relevant references have been included to justify this choice.

We acknowledge that a longer intervention period might have resulted in more pronounced effects on STS biomechanics. However, our study aimed to determine whether short-term IASTM could elicit meaningful improvements, particularly in strength, within a clinically feasible timeframe. We have now added “short-term” to the title, and expanded the Introduction and Discussion section to address this point and suggest that future research could explore the effects of extended interventions or repeated sessions to evaluate potential cumulative benefits (Lines 1-3, 102-105, 149-151, 355-362).

2. Limited Biomechanical Analysis:

Although improvements in muscle strength were noted, there were no significant changes in vertical ground reaction force (vGRF) or center of pressure (COP) parameters during the STS task. This raises questions about the functional relevance of the observed strength gains. The authors should clarify why these biomechanical measures did not show significant changes and discuss how this impacts the overall conclusions of the study.

Response: We recognize the importance of explaining the lack of significant changes in STS biomechanics despite increased muscle strength. As discussed in the manuscript, the STS task is a multifactorial movement requiring not only muscle strength but also neuromuscular coordination, postural control, and joint stability. While IASTM effectively enhanced lower limb strength, these improvements may not have been sufficient to influence the complex biomechanical demands of STS within the short study duration. Given the chronic nature of KOA, alterations in movement mechanics may require longer or more intensive interventions to manifest.

We have expanded the Discussion section to incorporate these explanations (Lines 338-353).

Minor Comments:

• Clarity and Precision: Some sections of the abstract could benefit from clearer language. For example, when discussing improvements in strength, it would be helpful to specify the magnitude of these improvements.

Response: We have revised the abstract for enhanced clarity and precision. Effect sizes (partial eta squared) have been included to provide a comprehensive overview of the observed outcomes (Lines 24-28). Additionally, percentage increases in strength have been integrated into the Results section for a clearer representation (Lines 286-291).

Reviewer Comments on Specific Sections:

Background Section:

• Clarity and Conciseness: While informative, some sentences are overly complex. Consider simplifying these for better readability.

Response: We have reviewed and revised all text to enhance readability. Sentences have been simplified where appropriate without compromising essential details.

• Definition of Key Terms: Critical biomechanical parameters such as vGRF and COP should be defined to aid reader comprehension.

Response: We have now provided clear definitions of vGRF and COP in the Background section to improve reader comprehension and clarify their relevance in assessing STS biomechanics in KOA patients (Lines 55-71).

Methods Section:

• Sample Size Justification: The rationale for using a medium effect size in sample size calculations should be better justified with context from previous studies.

Response: As there were no directly comparable studies, our sample size estimation was based on pilot data from a larger research project investigating IASTM's effects on various biomechanical parameters in KOA patients. The medium effect size was determined from pilot data, and we selected the largest required sample size across multiple variables to ensure adequate statistical power. More details have been incorporated into the Methods section for clarity (Lines 122-124).

Discussion and Conclusion Sections:

• Interpretation of Findings: The discussion should explore why strength gains did not lead to functional improvements, considering potential underlying mechanisms or factors influencing this discrepancy.

Response: We have expanded the Discussion section to provide a more in-depth analysis of this discrepancy. While increased muscle strength is an essential component of functional performance, the successful execution of the STS task also depends on neuromuscular coordination, proprioception, and joint stability. The lack of significant changes in vGRF and COP suggests that these factors may not have been sufficiently influenced by the intervention period.

Additionally, STS biomechanics are influenced by habitual movement patterns and compensatory strategies that develop over time in KOA patients. These strategies may persist despite improvements in strength, potentially explaining the absence of significant biomechanical changes in our study. Future research should explore whether combining IASTM with interventions targeting motor control and postural stability can yield more comprehensive functional improvements (Lines 338-353).

These comments aim to enhance the clarity, rigor, and overall quality of your manuscript. I appreciate your efforts in conducting this important research and look forward to seeing your revisions.

Response: We sincerely appreciate the reviewer's insightful comments, which have helped refine our manuscript. The suggested revisions have been carefully incorporated, and we believe these changes enhance the clarity, scientific rigor, and clinical relevance of our study.

Reviewer 2:

Response: We appreciate the reviewer's thorough evaluation of our study and the constructive feedback provided. Below, we address each comment in detail and outline the corresponding revisions made to the manuscript.

1- Abstract: Mention the specific sample size (30 participants) in the abstract for clarity.

Response: The sample size has already been mentioned in the abstract (Line 16).

2- Background: Discuss any limitations in existing literature related to IASTM and STS performance.

Response: We acknowledge the need to highlight gaps in the existing literature. While several studies have explored the effects of IASTM on pain, range of motion, and muscle strength, there is currently no research examining its influence on functional tasks like STS. Additionally, studies assessing IASTM's effects on kinetic parameters such as vGRF and COP during functional tasks are yet to be conducted. We have revised the Background section to emphasize these gaps and justify the need for our investigation. We have added more explanation on the importance of assessing kinetic variables (Lines 87-96).

3- Method: Expand on the justification for the four-session, two-week intervention duration. Why was this timeframe chosen? the intervention period of four sessions over two weeks was relatively short and may not have been sufficient to elicit changes in complex biomechanical outcomes.

Response: The choice of a two-week, four-session intervention was based on existing studies demonstrating the short-term neuromuscular effects of IASTM, particularly on pain modulation, muscle activation, and range of motion. Since IASTM is commonly used as an adjunct therapy, we aimed to assess whether a short-term protocol could elicit meaningful neuromuscular changes. While longer intervention periods may yield additional effects, our study focused on the short-term responses to IASTM, aligning with clinical applications. We have clarified this in the title, Introduction, Methods and Discussion section and further discussed it as a potential avenue for future research in the Discussion section (Lines 1-3, 102-105, 149-151, 355-362).

4- Method: Include references for the hand-held dynamometer's reliability and validity.

Response: Thank you for your suggestion. We have now included appropriate references supporting the reliability and validity of the hand-held dynamometer for assessing lower limb muscle strength (Lines 167-171).

5- Method: Can participants tell the difference between sham and real IASTM?

Response: None of the participants in either group had prior experience with IASTM. Participants were informed that the study aimed to assess a physiotherapy technique using instruments that are suggested to help alleviate symptoms.
The sham group received treatments targeting the same anatomical regions as the IASTM group (quadriceps, hamstrings, patellar area, gastrocnemius, and tibialis anterior) but with a light-touch application of the instrument, without applying the specific force or angle characteristic of IASTM. To further ensure blinding, treatment sessions for each group were scheduled separately to prevent cross-group interactions. Importantly, no participants in the sham group reported suspicion regarding their allocation throughout the study. These measures helped maintain a robust double-blind study design. More explanation has been added to the text for increased clarity (Lines 189-199).

6- Discussion: Expand on why strength gains in the knee extensors, flexors, and plantar flexors were insufficient to affect STS biomechanics.

Response: We have expanded the Discussion section to provide a more in-depth analysis of this discrepancy. While increased muscle strength is an essential component of functional performance, the successful execution of the STS task also depends on neuromuscular coordination, proprioception, and joint stability. The lack of significant changes in vGRF and COP suggests that these factors may not have been sufficiently influenced by the intervention period.

Additionally, STS biomechanics are influenced by habitual movement patterns and compensatory strategies that develop over time in KOA patients. These strategies may persist despite improvements in strength, potentially explaining the absence of significant biomechanical changes in our study. Future research should explore whether combining IASTM with interventions targeting motor control and postural stability can yield more comprehensive functional improvements (338-353).

7- Discussion: Compare findings with previous studies in discussion.

Response: Thank you for your suggestion. We have now included a more detailed comparison with previous research (Lines 316-325).

8- While kinetic parameters (vGRF and COP) were measured, the absence of kinematic (joint angles) and muscle activation (EMG) data limits the understanding of how IASTM affects neuromuscular coordination during STS.

Response: We acknowledge this limitation and have now explicitly mentioned it in the Limitation section. While our study focused on kinetic variables, incorporating kinematic and EMG analyses would provide a more comprehensive understanding of neuromuscular adaptations. Future research should explore these measures to examine how IASTM influences movement strategies and muscle activation patterns during STS (Lines 365-370).

9- The study focuses on objective measures but does not include patient-reported outcomes such as pain, function, or quality of life. According to your previous submission in the Middle East journal "Exploring the Impact of Instrument-Assisted Soft Tissue Mobilization on Functional Measures and Quality of Life in Knee Osteoarthritis Patients: A Randomized Controlled Trial" Both complement each other by addressing different aspects of the therapeutic effects of IASTM in KOA patients.

Response: We appreciate the reviewer's notice of our previous research. While both studies investigate the effects of IASTM in KOA patients, they address distinct aspects of its impact. The previous study focused on patient-reported outcomes, such as pain, functional ability, and quality of life, providing insight into the subjective benefits of IASTM. In contrast, the current study specifically examines objective biomechanical measures, including lower limb muscle strength and STS kinetics, to evaluate neuromuscular and mechanical adaptations. By assessing different outcome domains, these studies offer complementary but independent perspectives on IASTM's effects.

Reviewer 3:

We sincerely thank the reviewer for the thorough evaluation and valuable feedback on our study. Below, we have addressed each comment in detail and described the corresponding revisions made to the manuscript.

Abstract:

Please summery the background and conclusion part. In the conclusion, please write the most important finding of your study.

Response: We have revised the abstract to improve clarity and conciseness. The conclusion now highlights the most important finding of the study (Lines 6-10, and 32-34).

Please choose the key words according to the Mesh database.

Response: Thanks for your suggestion, all selected keywords are now aligned with the MeSH database.

Using any instrument to facilitate the soft tissue manipulation will be useful because of decreasing the pain and soft tissue stiffness. Why measuring the kinetic and kinematics parameters after using this instrument is necessary?

Response: While previous studies have demonstrated the clinical benefits of IASTM in terms of pain reduction and soft tissue flexibility, its impact on biomechanical parameters remains underexplored. Assessing kinetic variables, such as vGRF and COP, provides insight into functional adaptations beyond subjective or clinical outcomes, helping to understand how IASTM influences movement efficiency and neuromuscular control. This clarification has been added to the manuscript (Lines 87-96).

Method:

Ho did you manage the ethical problems of Sham group? The participants of sham group imagined that they received the standard and complete treatment.

Response: Participants were fully informed that they were enrolling in a randomized clinical trial with different intervention groups. However, to maintain blinding, they were not informed of the specific distinctions between the treatment and sham procedures. The sham group received treatment on the same anatomical regions but with a light-touch application of the instrument, without applying the specific force or angle characteristic of IASTM.

To uphold ethical standards, all participants in both groups were offered free physiotherapy sessions after completing the study, as we were assessing the effects of IASTM even in the treatment group. This process ensured that all participants received appropriate care and was approved by the ethics committee of the medical faculty (Lines 189-199).

Please describe more details about IASTM specifications.

Response: Thank you for your suggestion. We have provided more details regarding the IASTM tools in the Methods section for clarity (Lines 176-188).

Please depict the Consort flowchart of your study.

Response: We appreciate this suggestion. However, due to the journal's limit of five figures and tables, we prioritized presenting essential data related to our findings. Instead, we have included all relevant CONSORT details within the text. The study enrolled 33 participants, three withdrew for personal reasons, and 30 were randomly divided into two groups of 15. All participants completed the study and were included in the final statistical analysis (Lines 123-124, and 256-257).

OPEN PEER REVIEW

Revision (1)

REFEREE : Reviewer — 17 Feb 2025

Subject: Recommendation for Manuscript Publication

Dear Editor,

I have reviewed the revised version of the manuscript titled "The Effect of Short-Term Instrument-Assisted Soft Tissue Mobilization on Lower Limb Muscle Strength and Sit-to-Stand Kinetics in Patients with Knee Osteoarthritis: A Randomized Controlled Trial" and confirm that the authors have adequately addressed all the comments and suggestions provided in my initial review. The manuscript is now well-prepared and suitable for publication.

Thank you for the opportunity to contribute.

Best regards

REFEREE : Reviewer — 24 Feb 2025

Dear Editor
all corrections have been done.

REFEREE : Reviewer — 2 Mar 2025

Dear Editor
The authors have responded to points raised in my previous review.

REFEREE : Associate Editor — 2 Mar 2025

It is accepted.

Fatemeh Ehsani : EIC — 3 Mar 2025

Dear Authors
We are pleased to inform you that your article is accepted for publication in the MEJRHS. We hope to receive the other qualified articles from your group.