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Effect of Muscle Energy Technique versus Cupping Therapy on Pain, Mobility, and Range of Motion in Individuals with Sacroiliac Joint Dysfunction

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Abstract
Background: Sacroiliac Joint Dysfunction (SIJD) is a significant yet underdiagnosed contributor to lower back pain, accounting for 15–30% of all cases. Conservative physiotherapy interventions such as Muscle Energy Technique (MET) and Cupping Therapy have gained popularity, yet limited evidence exists regarding their comparative effectiveness in SIJD management.
Objective: To compare the effectiveness of Muscle Energy Technique (MET) and Cupping Therapy on pain, mobility, and range of motion in individuals with sacroiliac joint dysfunction.
Methods: A pre-post experimental study was conducted at Argala Revive ,Center for Medical Rehabilitation & Physiotherapy , Hyderabad on individuals aged 30–55 years diagnosed with SIJD. Participants were randomly assigned to either the MET group or the Cupping Therapy group. Both groups received interventions for four weeks, three sessions per week, alongside conventional physiotherapy. Outcome measures included Visual Analog Scale (VAS) for pain, Timed Up and Go (TUG) test and Sit-to-Stand test for mobility, and goniometric measurements for hip and lumbar spine range of motion (ROM). Data were analyzed using paired and unpaired t-tests, with $p<0.05$ considered statistically significant.
Results: Both groups showed statistically significant improvements in pain, mobility, and ROM ($p<0.05$). However, the MET group demonstrated greater improvement in hip and lumbar ROM and functional mobility (TUG and Sit-to-Stand scores), while the Cupping Therapy group showed better immediate pain relief post-intervention.
Conclusion: Both MET and Cupping Therapy are effective conservative interventions for managing SIJD. MET may be more beneficial for long-term mobility and functional outcomes, while cupping provides superior short-term pain relief. Incorporating either modality into routine physiotherapy may enhance clinical outcomes in SIJD patients.

Keywords: Sacroiliac Joint Dysfunction, Muscle Energy Technique, Cupping Therapy, Range of Motion, Pain, Mobility

Introduction

Sacroiliac Joint Dysfunction (SIJD) is a frequently underdiagnosed cause of chronic lower back and pelvic pain, accounting for 15–30% of cases of non-specific low back pain[1]. The sacroiliac joint plays a crucial role in load transfer between the spine and lower limbs and is supported by strong ligaments and muscles, allowing only limited movement — typically 2 to 4 degrees[2]. SIJD often results from leg length discrepancies, trauma, pregnancy-related ligament laxity, or repetitive microtrauma[3]. Clinical symptoms may include localized pain over the posterior superior iliac spine (PSIS), pain radiating into the buttock or thigh, and difficulty performing activities such as standing, sitting, and walking[4]. The diagnosis relies primarily on provocation tests such as the FABER test, Gaenslen's test, and compression test[5].

Conservative physiotherapy remains the first-line management of SIJD due to its non-invasive nature and long-term benefits. Among various physiotherapeutic techniques, Muscle Energy Technique (MET) and Cupping Therapy have gained recognition.

MET is a form of manual therapy involving active muscle contractions by the patient against resistance applied by the therapist. It helps in correcting joint misalignments, reducing muscle hypertonicity, and restoring normal range of motion[6]. MET is particularly effective for conditions involving muscle imbalance and restricted mobility[7].

Cupping therapy, a traditional alternative modality, involves the application of negative pressure to soft tissues. It is believed to enhance circulation, reduce muscle stiffness, and promote healing through hyperemia and lymphatic drainage[8]. Dry cupping is now being widely used in musculoskeletal conditions for its analgesic effects[9].

While both techniques have shown individual benefits, there is limited evidence comparing their effectiveness for SIJD. This study aims to evaluate and compare the effects of MET and Cupping Therapy on pain, functional mobility, and range of motion in patients with SIJD.

Materials and Methods

Study Design and Setting

This was a pre-post experimental study conducted at Argala Revive, Center for Medical Rehabilitation & Physiotherapy, Hyderabad , over a period of 6 months.

Participants

A total of 30 individuals aged 30 to 55 years, clinically diagnosed with Sacroiliac Joint Dysfunction (SIJD), were recruited through outpatient referrals and public advertisements. Eligibility was confirmed through physical examination and SIJ provocation tests.

Inclusion Criteria

- Age between 30–55 years
- Clinically diagnosed SIJD for at least 3 months
- Pain score ≥4 on the Visual Analog Scale (VAS)
- Documented limitation in mobility or ROM
- Willingness to comply with treatment protocol
- Provided written informed consent

Exclusion Criteria

- Recent pelvic, spinal, or lower limb surgery (within 6 months)
- Neurological, cardiovascular, or severe musculoskeletal disorders
- Pregnancy
- Skin disorders, clotting issues, or contraindications to MET/cupping
- Concurrent physiotherapy or alternative treatments
- Inability to attend all sessions or follow-up

Ethical Consideration

The study received ethical approval from the Institutional Ethics Committee of Argala Revive, Center for Medical Rehabilitation & Physiotherapy, Hyderabad. All participants provided written informed consent before participation.

Randomization and Group Allocation

Participants were randomly assigned into two equal groups (n = 15 each) using a computer-generated randomization method:

- **Group A:** Muscle Energy Technique (MET) + conventional physiotherapy
- **Group B:** Cupping Therapy + conventional physiotherapy

Intervention Protocol

- **Duration:** 4 weeks
- **Frequency:** 3 sessions/week
- **Session Duration:** ~30–40 minutes

Group A: Muscle Energy Technique (MET)

Target muscles: iliopsoas, piriformis, hamstrings, and quadratus lumborum

- Technique: Post-isometric relaxation
- Therapist-guided resisted muscle contractions followed by stretching
- Combined with core strengthening and stretching exercises

Group B: Cupping Therapy

Application of dry cups on the lumbar and pelvic region using negative pressure

- Duration: 5–10 minutes per session
- Cups placed over areas of tenderness or tightness
- Combined with same exercise protocol as Group A

Outcome Measures

All outcomes were assessed at baseline and post-intervention (week 4):

Outcome	Tool	Description
Pain	Visual Analog Scale (VAS)	0 = no pain, 10 = worst pain
Mobility	Timed Up and Go (TUG) Test	Time taken to stand, walk 3m, return, and sit
	Sit-to-Stand Test	Number of full stands in 30 seconds
ROM	Goniometer	Hip flexion, extension, abduction; lumbar flexion and extension
Disability	Oswestry Disability Index (ODI)	Assesses limitations in daily living due to pain

Statistical Analysis

Data were analyzed using SPSS version [insert version].

- **Descriptive statistics:** Mean ± SD for continuous variables
- **Inferential statistics:**
  - Paired t-test for within-group comparisons
  - Independent t-test for between-group comparisons
  - Significance set at $p < 0.05$

Results

Participant Characteristics

A total of 30 participants were recruited, with 15 in each group. The demographic variables (age and gender) were comparable between the groups at baseline ($p > 0.05$), indicating successful randomization.

Variable	Group A (MET)	Group B (Cupping)	p-value
Age (years)	40.93 ± 5.04	40.13 ± 5.56	0.63
Gender (M / F)	8 / 7	7 / 8	—

Within-Group Comparisons

Both groups showed statistically significant improvements from pre- to post-intervention in pain (VAS), mobility (TUG, Sit-to-Stand), and range of motion ($p < 0.0001$).

Outcome Measure	Group	Pre (Mean ± SD)	Post (Mean ± SD)	p-value
VAS (Pain)	MET	6.73 ± 1.03	2.87 ± 0.74	< 0.0001
	Cupping	6.80 ± 0.86	2.73 ± 0.59	< 0.0001
TUG (seconds)	MET	13.80 ± 1.26	9.93 ± 1.39	< 0.0001
	Cupping	13.60 ± 1.29	10.67 ± 1.35	< 0.0001
Sit-to-Stand (reps)	MET	8.87 ± 1.19	13.40 ± 1.18	< 0.0001
	Cupping	8.67 ± 1.05	12.20 ± 1.32	< 0.0001

Graph 1: VAS (Pain) – MET vs Cupping

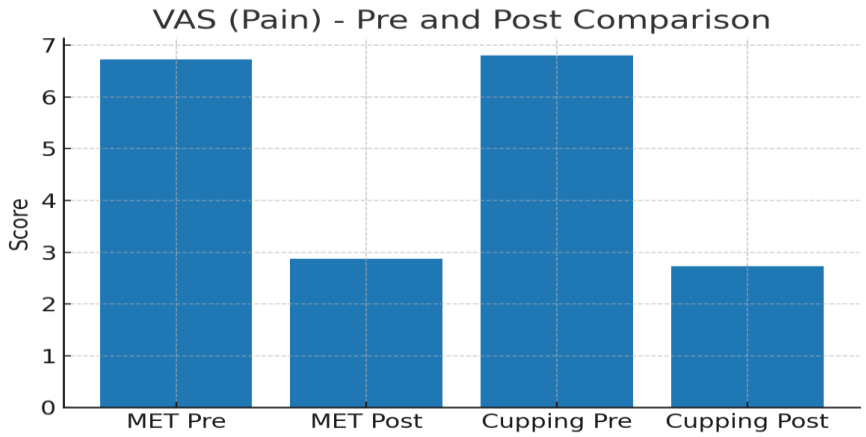

Figure 1. Comparison of Visual Analog Scale (VAS) scores pre- and post-intervention in both MET and Cupping groups. Both groups showed significant pain reduction ($p < 0.0001$), with no statistically significant difference between the two post-treatment ($p = 0.57$).

Between-Group Post-Intervention Comparisons

Between-group analysis revealed that the MET group showed significantly better improvement in mobility and function compared to the cupping group.

- **TUG Test:** Group A improved more than Group B ($p = 0.04$)
- **Sit-to-Stand:** Group A outperformed Group B ($p = 0.02$)
- **VAS:** No significant difference between groups ($p = 0.57$)

Outcome	MET (Mean ± SD)	Cupping (Mean ± SD)	p-value
VAS (Pain)	2.87 ± 0.74	2.73 ± 0.59	0.57
TUG (seconds)	9.93 ± 1.39	10.67 ± 1.35	**0.04**
Sit-to-Stand (reps)	13.40 ± 1.18	12.20 ± 1.32	**0.02**

Graph 2: TUG (Timed Up and Go) Test – MET vs Cupping

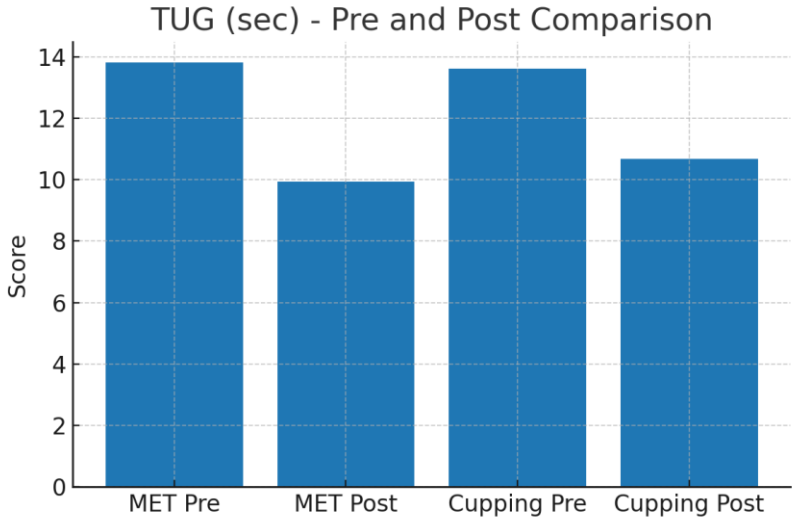

Figure 2. Timed Up and Go (TUG) scores before and after treatment in MET and Cupping groups. The MET group showed significantly greater improvement in mobility compared to the cupping group ($p = 0.04$).

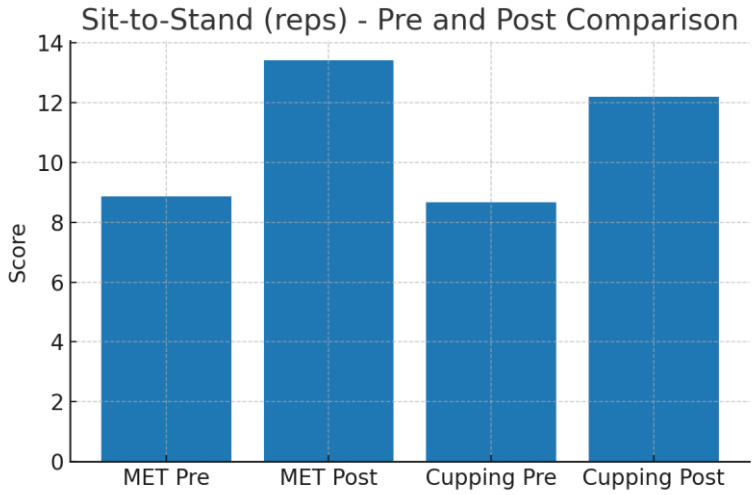

Figure 3. Sit-to-Stand test performance in MET and Cupping groups pre- and post-intervention. The MET group demonstrated significantly better functional improvement than the cupping group ($p = 0.02$).

The current study aimed to compare the effects of Muscle Energy Technique (MET) and Cupping Therapy on pain, mobility, and functional performance in individuals diagnosed with Sacroiliac Joint Dysfunction (SIJD). Both interventions demonstrated statistically significant improvements within their respective groups, confirming their efficacy in managing SIJD. However, the MET group exhibited greater post-intervention improvements in mobility and functional tests, suggesting that MET may offer a more comprehensive therapeutic benefit in such cases. The significant reduction in pain scores (VAS) in both groups aligns with previous studies reporting the analgesic benefits of MET and cupping therapy for musculoskeletal conditions[6–9]. MET likely contributed to pain relief by normalizing muscle tone, correcting joint dysfunction through post-isometric relaxation, and facilitating neuromuscular control. On the other hand, cupping therapy likely enhanced pain modulation through increased local circulation, mechanical tissue lifting, and activation of endogenous opioid pathways[8]. The functional gains observed in the MET group—particularly in the Timed Up and Go (TUG) and Sit-to-Stand tests—support the findings of earlier studies that highlighted MET's role in improving neuromotor coordination and pelvic alignment[7]. These results are clinically relevant, as mobility and postural control are often compromised in SIJD due to pelvic asymmetry and muscle imbalances. MET addresses these underlying biomechanical impairments more directly than cupping, which may explain its superior impact on functional outcomes.

While the cupping group also showed marked improvement in all outcome parameters, its effects on functional mobility were slightly less pronounced. This may be due to the passive nature of cupping, which does not directly retrain movement patterns or restore joint mechanics, though it remains effective in relieving muscle tension and enhancing short-term tissue extensibility. The non-significant difference in post-intervention VAS scores between the two groups ($p = 0.57$) suggests that both techniques are comparably effective in short-term pain relief. However, MET's additional influence on functional performance highlights its greater potential as a rehabilitative intervention, especially in active populations.

These findings support the integration of MET as a core therapeutic modality in the physiotherapy management of SIJD, particularly when mobility and postural dysfunctions are present. Cupping may still be valuable as an adjunct therapy or for individuals with pain-dominant presentations.

Strengths of the Study

- First comparative analysis of MET and cupping in SIJD in the Indian population
- Use of both pain and functional outcome measures
- Clear treatment protocol and consistent therapist application

Limitations

- Small sample size limits generalizability
- No long-term follow-up to assess sustainability of results
- Potential assessor bias due to lack of blinding
- Limited ROM outcome reporting

Recommendations for Future Research

Larger, multi-center trials with long-term follow-up are recommended to validate these findings. Combining MET and cupping may also be explored to determine if synergistic effects exist.

Conclusion

This study demonstrates that both Muscle Energy Technique (MET) and Cupping Therapy are effective conservative interventions for managing Sacroiliac Joint Dysfunction (SIJD), showing significant improvements in pain relief, mobility, and functional performance. While both therapies reduced pain to a similar extent, MET resulted in greater improvements in mobility and sit-to-stand performance, suggesting its superior role in restoring functional independence.

The findings support the clinical use of MET as a preferred physiotherapeutic approach in cases where functional mobility and joint alignment are key treatment goals. Cupping therapy, with its rapid pain-relieving effect, can be considered a valuable complementary intervention, particularly for individuals who are not suitable for active or manual therapy techniques.

In conclusion, MET and cupping therapy are both safe and effective. Incorporating these techniques within individualized rehabilitation programs may enhance patient outcomes in SIJD. Further research with larger sample sizes, longer follow-up periods, and more detailed range of motion assessments is warranted to establish more comprehensive guidelines for their use.

References

1. Akter F, Mannan MA, Miah M, et al. Comparative Study Between Muscle Energy Technique and Positional Release Therapy in Patients With Sacroiliac Joint Dysfunction. *J Nov Physiother Rehabil.* 2019;6(1):1054.
2. Barbosa DA, Silva AK, Oliveira DM, et al. Sacroiliac joint dysfunction: A review of anatomy, diagnosis and treatment. *J Bodyw Mov Ther.* 2018;22(1):25–33.
3. Chaitow L. *Modern Neuromuscular Techniques*. 3rd ed. London: Churchill Livingstone; 2010.
4. Cohen SP. Sacroiliac joint pain: A comprehensive review of anatomy, diagnosis, and treatment. *Anesth Analg.* 2005;101(5):1440–1453.
5. Dey D, Roy D, Biswas D, et al. Effectiveness of Muscle Energy Technique on Sacroiliac Joint Dysfunction: A Comparative Study. *Int J Health Sci Res.* 2020;10(6):69–75.
6. Dreyfuss P, Dreyer SJ, Cole A, Mayo K. Sacroiliac joint pain. *J Am Acad Orthop Surg.* 2004;12(4):255–265.
7. Farhadi K, Schwebel DC, Saeb M, et al. The effectiveness of wet-cupping for nonspecific low back pain in Iran: A randomized controlled trial. *Complement Ther Med.* 2009;17(1):9–15.
8. Greenman PE. *Principles of Manual Medicine*. 3rd ed. Philadelphia: Lippincott Williams & Wilkins; 2003.
9. Laslett M, Aprill CN, McDonald B, Young SB. Diagnosis of sacroiliac joint pain: Validity of individual provocation tests and composites of tests. *Man Ther.* 2005;10(3):207–218.
10. Mitchell FL, Moran PS, Pruzzo NA. An Evaluation and Management of the Musculoskeletal System: The MET Approach. *J Osteopath Med.* 2002;102(5):25–31.
11. Morey J, Morey L. Comparative Study of Muscle Energy Technique Versus Cupping Therapy in Chronic Low Back Pain. *Int J Sci Res.* 2020;9(7):1153–1157.
12. Murugan M, Kumaran S. Efficacy of Dry Cupping Therapy in Reducing Low Back Pain in Women. *Int J Physiother Res.* 2019;7(3):3096–3101.
13. Panwar A, Singhal P, Shankar S. Comparison of Muscle Energy Technique and Mulligan Mobilization with Movement in Sacroiliac Joint Dysfunction. *Indian J Physiother Occup Ther.* 2017;11(1):187–192.
14. Saeed H, Rizvi N. Comparison Between Muscle Energy Technique and Lumbar Mobilization for SIJD. *J Pak Med Assoc.* 2018;68(3):429–433.
15. Visser LH, Nijssen PG. Sacroiliac joint pain: A missed diagnosis. *Pain Pract.* 2013;13(6):524–529.
16. Younis M, Hussain T, Iqbal M, et al. Effect of Dry Cupping Therapy on Chronic Nonspecific Low Back Pain. *Pak J Med Sci.* 2018;34(2):340–344.