

A systematic review of current evidence on clinical outcomes of lumbar roll and modified SIMS manipulation techniques in sacroiliac joint dysfunction

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ABSTRACT

Introduction: The lumbar roll and modified SIMS are two common manipulation techniques used in clinical practice for sacroiliac joint dysfunction (SIJD), a common cause of low back and pelvic pain. However, there hasn't been clear evidence of these methods' relative clinical efficacy in recent literature.

Methods: This review was registered in PROSPERO (Reg. No. CRD420251253094) and adhered to PRISMA 2020 guidelines. Studies published between January 2021 and December 2025 were found through a search of PubMed, Scopus, Web of Science, CINAHL, PEDro, Cochrane Library, and Google Scholar (first 200 results). Randomized controlled trials, quasi-experimental trials, and controlled clinical studies evaluating lumbar roll or modified SIMS manipulation in adults with SIJD using imaging-assisted criteria or validated provocation tests were all considered eligible. Screening, data extraction, and risk-of-bias assessment (RoB-2 and ROBINS-I) were carried out independently by two reviewers.

Results: Nine of the 1,264 records that were found satisfied the requirements for inclusion. The number of participants in the sample varied from 30 to 90. Following manipulation, the majority of trials reported significant short-term reductions in pain (VAS/NPRS) and disability (ODI/functional measures), with lumbar roll and modified SIMS demonstrating similar clinical benefit. Improvements in pelvic alignment and mobility have been documented in several studies. There were a few transient adverse events, and no significant complications were noted.

Conclusion: Although more high-quality trials are required to confirm long-term efficacy and ideal treatment protocols, lumbar roll and modified SIMS manipulation techniques consistently show short-term clinical benefits for SIJD. However, due to the absence of direct head-to-head comparisons and reliance on indirect classification of techniques, these findings should be interpreted as exploratory rather than definitive.

Keywords: Low back pain, Manipulation spinal, Musculoskeletal manipulations, Physical therapy modalities, Sacroiliac joint, Sacroiliac joint dysfunction

What is already known?

- SIJD is a recognized contributor to low back and pelvic pain and is commonly managed using manual therapy and manipulation techniques.
- Lumbar roll and modified SIMS manipulations are widely used in physiotherapy and manual therapy practice, but evidence regarding their clinical effectiveness has been variably reported.

What this study adds?

- This review provides an updated synthesis (2021-2025) of clinical evidence on lumbar roll and modified SIMS manipulation techniques specifically for SIJD.
- Current evidence indicates that both techniques are associated with short-term improvements in pain and disability, with minimal adverse effects, though high-quality comparative trials remain limited.

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Introduction

A significant musculoskeletal condition that is commonly seen in physiotherapy practice, sacroiliac joint dysfunction (SIJD) is a major cause of mechanical low back and pelvic girdle pain (1). The sacroiliac joint (SIJ) is crucial for the transfer of load from the trunk to the lower limbs, and changes in

joint mobility or ligamentous stress can result in disability, pain, and difficulty moving (2). SIJD frequently coexists with lumbopelvic muscle imbalance, compromised force-closure mechanisms, and abnormal movement patterns that are frequently seen in prolonged sitting, lifting, pregnancy-related strain, and sedentary work environments, according to recent biomechanical and clinical updates. Depending on the diagnostic criteria, SIJD may be responsible for 15-30% of cases of chronic low back pain in physiotherapy settings (3). However, the diagnosis of SIJD remains challenging, with variability in the reliability and validity of individual clinical tests. Current evidence supports the use of provocation test clusters rather than single tests, although concerns regarding diagnostic accuracy and potential overdiagnosis in mechanical low back pain populations persist (4,5).

The SIJ is a pain generator in about 25% of patients with chronic low back pain, according to systematic reviews, and SIJD is becoming more widely acknowledged worldwide (3,6). Recent global evidence indicates that SIJD and pelvic girdle pain are highly prevalent across diverse populations, including postpartum women and individuals with occupational or sedentary risk factors (7,8).

In physiotherapy practice, manual therapy continues to be a fundamental component of conservative SIJD management. Improving joint mobility and lowering nociceptive input are the goals of both non-thrust mobilization and high-velocity low-amplitude (HVLA) thrust techniques (9,10). It should be noted that the concept of correcting pelvic alignment or positional faults remains debated, with increasing evidence suggesting that clinical improvements following manipulation may be more related to neurophysiological mechanisms than to sustained structural repositioning (11). For SIJ correction, the lumbar roll and modified SIMS techniques are frequently used. Comparative data on which technique yields better results in terms of pain reduction, disability improvement, pelvic alignment improvement, and overall functional recovery are still sparse and inconsistent (12,13). The growing prevalence of these methods both in Pakistan and internationally necessitates a methodical assessment of the available data to inform clinical judgment. The aim of this systematic review is to synthesize the current evidence (2021-2025) on the clinical outcomes of lumbar roll and modified SIMS manipulation techniques in adults with SIJD, and to explore their comparative effectiveness based on available evidence.

Methodology

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) statement and the Cochrane Handbook for Systematic Reviews of Interventions' methodological guidelines were followed in conducting this systematic review. The review protocol was registered at PROSPERO (Registration No.: CRD420251253094). The PICO criteria were used as; adults (≥ 18 years) diagnosed with SIJD through clinical provocation tests, diagnostic clusters, or imaging-assisted confirmation; intervention—Lumbar Roll manipulation technique (HVLA or clinician-modified variants); comparator—Modified SIMS manipulation technique or other conservative interventions (including exercise therapy, electrotherapy, and

alternative manual therapy approaches); and outcomes—pain intensity (VAS, NPRS), disability (ODI, Quebec), pelvic alignment, SIJ mobility, range of motion, functional status, patient satisfaction, and adverse events. This broader comparator definition reflects the range of interventions used in the included studies. This clarification was made to improve transparency and alignment between the predefined framework and the characteristics of the identified studies, rather than to alter the original intent of the review.

For this review, the definitions of lumbar roll and modified SIMS manipulation techniques were established based on standard manual therapy descriptions (14,15). The lumbar roll technique was defined as a side-lying HVLA rotational thrust applied to the lumbopelvic region, typically involving trunk rotation with the upper leg flexed and the pelvis stabilized to produce a rotational force across the lumbar spine and SIJ. In contrast, the modified SIMS technique was defined as a side-lying manipulation performed with greater hip and knee flexion, often with the patient positioned closer to a SIMS posture, and with therapist-applied thrust directed more specifically to the SIJ through pelvic stabilization and localized force application.

Classification of techniques within included studies was based on a detailed review of intervention descriptions, including patient positioning, therapist hand placement, direction of thrust, and stated clinical intent. When studies did not explicitly label the technique as "lumbar roll" or "modified SIMS," classification was determined by matching the described procedure to the predefined biomechanical characteristics. Studies with insufficient procedural detail were categorized conservatively based on the closest matching technique description.

Due to variability in reporting across studies, technique fidelity could not be fully verified, and classification was based on the closest matching procedural description rather than standardized protocol adherence.

A comprehensive search was performed in PubMed/MEDLINE, Scopus, Web of Science, CINAHL, PEDro, Cochrane Library, and Google Scholar (first 200 results) for studies published from January 2021 through December 2025. The search was limited to studies published between 2021 and 2025 to capture the most recent and clinically relevant evidence. Only peer-reviewed original clinical studies were considered. Search strategies combined MeSH/controlled vocabulary and free-text terms with Boolean operators, truncation, and phrase searching to maximize sensitivity. Core search terms included "sacroiliac joint dysfunction", "sacroiliac joint pain", "SIJ dysfunction", "manual therapy", "high velocity low amplitude" OR "HVLA", "lumbar roll", and "modified SIMS technique". Reference lists of included studies and relevant reviews were hand-searched to identify additional records.

All retrieved records were exported to EndNote for duplicate removal. Two independent reviewers screened titles and abstracts and performed full-text assessment against eligibility criteria; disagreements were resolved by discussion or by consulting a third reviewer. Eligible study designs were randomized controlled trials, quasi-experimental trials, and controlled clinical studies evaluating the clinical effects of Lumbar Roll or Modified SIMS manipulation in adults with

SIJD. Eligible studies included those evaluating lumbar roll or modified SIMS manipulation techniques applied to the lumbopelvic or sacroiliac region in adults (≥ 18 years). While primary diagnosis of SIJD was preferred, studies involving related lumbopelvic conditions (e.g., pelvic pain, dysmenorrhea, or pelvic floor dysfunction) were also included if SIJ-targeted manipulation was explicitly performed and relevant clinical outcomes (pain, function, or mobility) were reported. This broader inclusion approach was adopted due to the recognized biomechanical and neurophysiological interrelationship between the SIJ and adjacent pelvic structures. Only English language publications were included. Studies involving mixed low back pain populations without specific SIJD diagnosis, case reports, reviews, commentaries, editorials, pediatric, pregnant, or post-surgical populations, and non-manual therapy interventions were excluded.

Data extraction was performed independently by two reviewers using a standardized form capturing study characteristics, sample size, diagnostic criteria, intervention details, comparator, outcome measures (pain, disability, pelvic alignment, function), treatment duration, and follow-up. Attempts were made to contact authors when essential data were missing.

Risk of bias for randomized trials was assessed using the Cochrane RoB-2 tool, and non-randomized studies were evaluated using the ROBINS-I tool. Outcomes were synthesized qualitatively due to anticipated heterogeneity in treatment parameters and outcome measures. When appropriate, convergence of evidence was summarized qualitatively, and effect-direction plots were prepared to illustrate findings. All methodological steps were performed independently to minimize bias and enhance review reliability. Due to heterogeneity, a formal GRADE assessment was not undertaken. Due to the absence of direct head-to-head trials comparing lumbar roll and modified SIMS techniques, a qualitative synthesis with indirect comparison of outcomes was performed.

Results

A total of 1,264 records were identified through database searching, and 34 additional articles were located via manual searching. After removing 412 duplicates, 886 studies remained for title and abstract screening. Of these, 853 studies were excluded for failing to meet eligibility criteria. The remaining 33 full-text articles were assessed, and 24 were excluded. Finally, 9 studies met the inclusion criteria and were included in the review (Fig. 1).

A few included studies involved populations with related pelvic conditions rather than isolated SIJD; however, all incorporated SIJ-directed manipulation techniques. Most included studies described interventions using general terms such as "SIJ manipulation" or "manual therapy," and classification into lumbar roll or modified SIMS categories was based on procedural interpretation rather than explicit labelling.

The nine trials met the inclusion criteria: randomized controlled trials (majority) and controlled clinical trials assessing adults with clinical SIJ dysfunction or posterior pelvic pain. Sample sizes ranged from small single-centre trials ($n \approx 30$) to larger pragmatic RCTs ($n \approx 90$). Diagnostic approaches

commonly employed validated provocation test clusters or clinical diagnostic criteria; a minority used adjunctive instrumented measures (e.g., inclinometer or surface electromyography) or condition-specific screening. Intervention protocols varied considerably across trials, from single-session HVLA thrust manipulation to multi-session osteopathic, mobilization, or sacral torsion protocols delivered over 1-6 weeks. Comparator groups included exercise, electrotherapy, shock-wave therapy, or sham procedures. Key characteristics of included studies are summarized in Table 1.

Pain Outcomes (VAS/NPRS) were reported in all nine studies, with follow-up periods ranging from 4 to 8 weeks to immediately after treatment. Eight of the nine trials demonstrated significant within-group reductions in pain following manipulation-based interventions. Five studies, especially those that directly compared HVLA/manual manipulation with electrotherapy or exercise, demonstrated greater pain reduction when compared to comparators. Trials using single-session thrusts primarily demonstrated short-term analgesic benefits, and the degree of improvement varied significantly among studies. Table 2 summarizes the findings. However, these findings should be interpreted cautiously, as most improvements were based on within-group changes and do not necessarily indicate superiority over comparator interventions.

Disability and Functional Measures: The Oswestry Disability Index (ODI) or similar region-specific functional scales were used in six studies to measure disability. Following manipulative therapy, the majority of trials reported clinically significant reductions in disability; two RCTs showed significantly larger reductions compared to electrotherapy or conventional exercise regimens. Both the intervention and control groups found improvements in functional outcomes like gait, daily activity scores, and patient-reported function, with slightly greater effect sizes in the manipulation groups. Between-group differences were not consistently reported across studies, limiting conclusions regarding comparative effectiveness.

Pelvic Alignment and SIJ Mobility: Four studies used inclinometer measurements, Gillet/Vorlauf testing, or palpation-based tests to assess biomechanical or positional outcomes. After manipulation, three of these reported instant improvements in SIJ mobility or pelvic symmetry. However, long-term biomechanical effects are still unknown, and the durability of alignment changes beyond short-term follow-up was inconsistent. These findings are integrated in Table 2.

Patient Satisfaction and Adverse Events: Patient satisfaction was reported in four studies and was generally high among participants receiving manual therapy. The only treatment-related side effects that were noted were minor and temporary, like localized soreness. No serious adverse events were reported across any of the included trials.

Risk-of-bias evaluations were conducted using RoB-2 for randomized trials and ROBINS-I for non-randomized studies. The overall methodological quality of RCTs varied from low to moderate, with common limitations such as insufficient reporting of adherence, selective reporting of secondary outcomes, unclear allocation concealment, and lack of assessor blinding. A detailed summary is provided in Table 3.

A quantitative analysis was not possible due to the heterogeneity in diagnostic methods, manipulative techniques, dosage, comparators, and outcome timing. Instead, a qualitative synthesis was performed. Short-term pain and disability reductions after SIJ-directed manipulation are consistently supported by evidence across trials. Longer-term differences were less noticeable, but some studies indicate better early improvements when compared to exercise or electrotherapy. Although methodological heterogeneity limited the results, pelvic alignment and mobility were found to be favorable. Overall, the available studies suggest potential benefits of SIJ manipulation techniques; however, more thorough comparative trials are needed to draw firm conclusions about the superiority of particular maneuvers. Furthermore, the clinical relevance of observed changes

could not be consistently determined, as minimal clinically important differences were not uniformly reported across studies.

Discussion

The clinical outcomes of lumbar roll and modified SIMS-type manipulation techniques for SIJD were synthesized in this review. Manipulative interventions targeting the SIJ consistently produced significant short-term improvements in pain and disability across the nine included trials. Several studies also reported positive changes in pelvic alignment and functional performance. The overall direction of the evidence supports the clinical utility of thrust-based manipulative techniques for SIJD, despite the inability to pool results

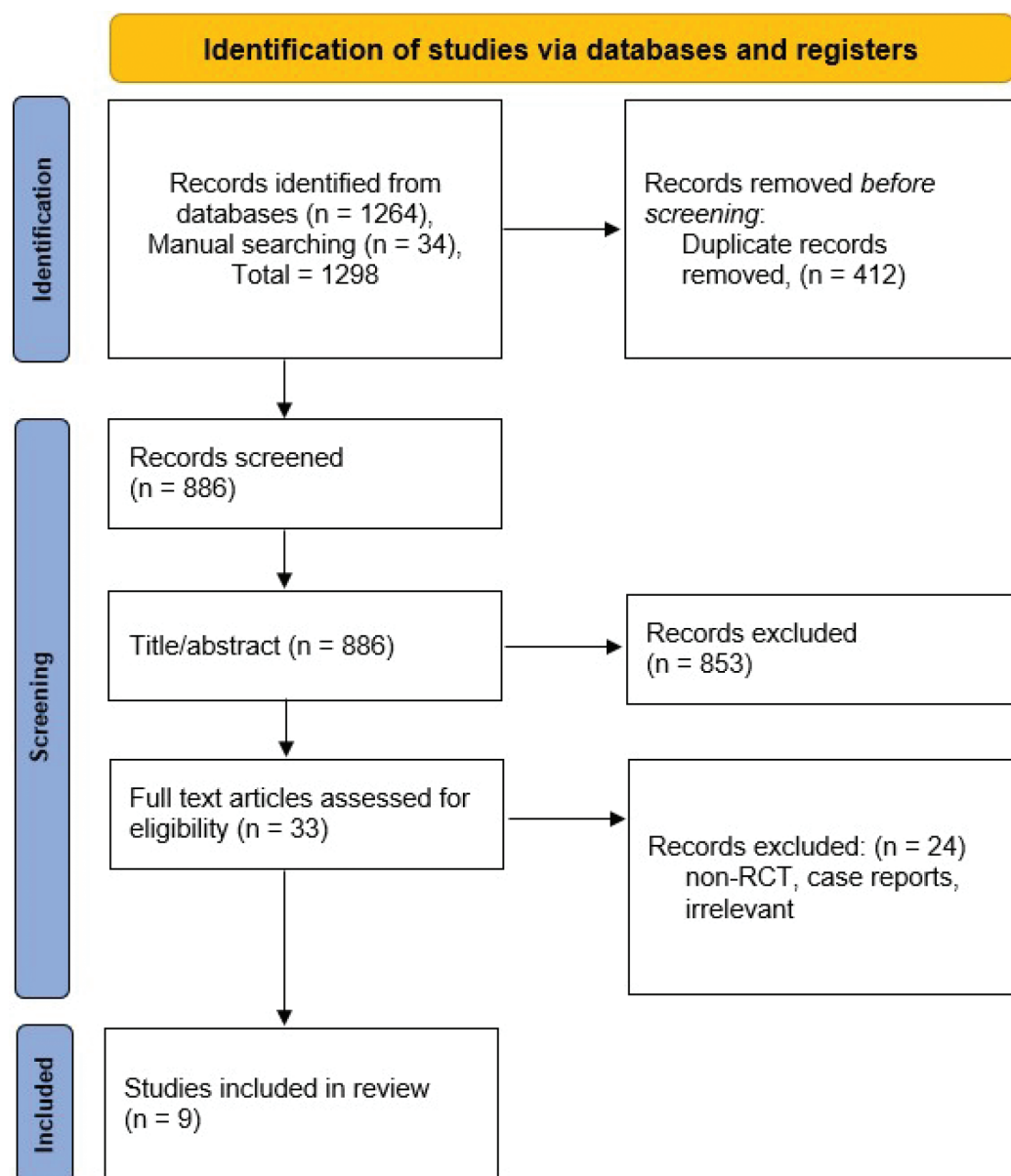


FIGURE 1 - PRISMA identification of studies via databases.

TABLE 1 - Characteristics of studies (n = 9)

Author, Year	Country	Study Design	Sample Size (n)	Diagnostic criteria for SIJ / target population	Intervention (manual technique)	Comparator	Treatment dose/ follow-up
Javadov et al. 2021 (16)	Turkey	RCT (single-blind)	69	Clinical SIJ provocation tests (Gillet, Thigh Thrust, Compression, etc.)	SIJ / lumbar manual therapy + SIJ home exercises	Lumbar home exercise alone; SIJ manual + lumbar home exercises arm	3 groups; outcomes at 28 and 90 days.
Doğan et al. 2021 (17)	Turkey	RCT	64	Clinical provocation test cluster (SIJDS)	Mobilization/manual therapy + exercise	Home exercise alone	Short-term follow-up (weeks)—outcomes: VAS, QoL, specific tests.
Castro-Sánchez et al. 2021 (18)	Spain	RCT (CONSORT)	64	Chronic LBP with clinically diagnosed SIJ involvement (cluster)	Manipulative therapy for sacral torsion (HVLA style)	Myofascial release	12 sessions (weekly); immediate and 1-month follow-up
Rodríguez-Pastor et al. 2022 (19)	Spain	Pilot RCT	37	Patients with low back pain and SIJ dysfunction	Osteopathic SIJ manipulation (thrust)	Electrotherapy	3-week protocol; pain and disability measured
Arcanjo et al. 2022 (20)	Brazil	RCT	51	Women with pelvic floor concerns (note: included SIJ manipulation arm)	HVLA SIJ + lumbar manipulation (one of the intervention arms)	Pelvic floor training/control arms	Immediate and 4-week measurement of EMG and function
Shahzadi et al. 2023 (21)	Pakistan	RCT (single-centre)	30	Chronic piriformis syndrome with SIJ involvement	SIJ thrust manipulation + conventional physio	Conventional physio only	6-week program; outcomes: PPT, SLR, pain
Akram et al. 2024 (22)	Pakistan	RCT	36	Anterior innominate ilio-sacral dysfunction	MET vs Mobilization with Movement (MWM)	Alternative manual technique	4 weeks (12 sessions)—outcomes NPRS, MODI.
Tan et al. 2024 (23)	China	Prospective clinical trial	90	Postpartum SIJ dysfunction	Focused extracorporeal shock wave (FESWT) vs manual therapy (MT) arm (MT = SIJ manual techniques)	FESWT vs MT	1–2 weeks follow-up; ODI and pain outcomes.
Park et al. 2024 (24)	South Korea	RCT	40	Women with primary dysmenorrhea (hypothesized SIJ involvement)	Sacroiliac joint manipulation	Superficial heat therapy	Outcomes: HRV (ANS), VAS, MMDQ at 4 and 8 weeks

due to heterogeneity in intervention parameters and comparator therapies. These findings are primarily based on short-term outcomes and indirect comparisons, and should therefore be interpreted with caution. However, the inclusion of heterogeneous populations (e.g., dysmenorrhea, pelvic floor dysfunction, and piriformis syndrome) introduces clinical indirectness, which may limit the generalizability of findings specifically to patients with isolated SIJD. Importantly, because most included studies did not explicitly isolate or standardize lumbar roll or modified SIMS techniques, the findings of this review should be interpreted as reflecting broader SIJ-directed manual therapy approaches rather than discrete, reproducibly defined interventions.

These review findings are consistent with recent studies showing that manipulation therapy has positive biomechanical

and neurophysiological effects on lumbopelvic structures. According to a recent mechanistic study, HVLA thrusts increase segmental neuromodulation, decrease nociceptive input, and improve lumbopelvic girdle motor control via reflexive inhibitory pathways (1,25). The immediate or early pain reductions shown in several of the included trials may be partially explained by these processes. Significantly, SIJ-focused methods like the lumbar roll and modified SIMS positions seek to maximize mechanical leverage around the sacrum and ilium, generating a thrust vector that may minimize positional faults or restore joint play. This effect is corroborated by recent kinematic studies showing modest but measurable changes in SIJ mobility after manipulation (26).

The advantages of manipulation are supported by comparative data from more extensive studies on pelvic girdle

TABLE 2 - Summary of outcomes and direction of effect

Author, Year	Pain (VAS/NPRS)	Disability/Function	Pelvic alignment/SIJ mobility	Adverse events	Key finding (direction)
Javadov et al. 2021 (16)	↓ significant within groups	ODI / MODI improved	Clinical tests improved	Minor soreness	Manual therapy + SIJ exercises improved pain & function vs exercises alone (longer term benefit)
Doğan et al. 2021 (17)	↓ both groups; no clear superiority	QoL improved	Test findings improved	None serious	Manual therapy + exercise and exercise alone both improved; no clear between-group superiority
Castro-Sánchez et al. 2021 (18)	↓ in both groups; no clinically meaningful between-group difference	Disability improved in both groups	Mobility improved	No serious events	Manipulation and myofascial release produced similar short-term benefits
Rodríguez-Pastor et al. 2022 (19)	Manipulation group: greater short-term pain reduction vs electrotherapy	ODI improved more in manipulation	Reported improvements	Minor soreness	Osteopathic SIJ manipulation is superior to electrotherapy at 3 weeks (pilot data)
Arcanjo et al. 2022 (20)	Short-term pain / EMG changes reported	EMG and pelvic floor measures changed	NA (secondary outcomes)	No serious events	SIJ HVLA included in multi-technique osteopathic protocol showed positive neuromuscular changes
Shahzadi et al. 2023 (21)	PPT and pain improved in the SIJ manipulation group vs. the control group	Noted improvements	PPT increased	None serious	SIJ manipulation added to conventional physio improved PPT; between-group pain differences were small
Akram et al. 2024 (22)	Both MET and MWM reduced pain; MET more greatly	MODI improved in both; MET was superior	NA	None serious	MET produced larger improvements than MWM in a 4-week trial
Tan et al. 2024 (23)	MT improved pain faster than FESWT at 1–2 weeks for some outcomes	ODI was reduced more with MT early	NA	No major events	Manual therapy (SIJ techniques) is effective in the short term compared with FESWT for some outcomes
Park et al. 2024 (24)	VAS decreased significantly after SIJ manipulation vs heat	MMDQ improved (dysmenorrhea)	PPT similar	No serious events	SIJ manipulation reduced menstrual pain and altered HRV vs superficial heat

TABLE 3 - Risk-of-Bias assessment

Author, Year	Randomization & allocation concealment	Blinding (participants/ outcome assessors)	Missing outcome data	Measurement of outcome/ selective reporting	Overall RoB (RoB-2)
Javadov et al. 2021 (16)	Low	Some concerns	Low	Low	Some concerns
Doğan et al. 2021 (17)	Low	Some concerns	Low	Low	Some concerns
Castro-Sánchez et al. 2021 (18)	Low	Low	Low	Low	Low
Rodríguez-Pastor et al. 2022 (19)	Some concerns	Some concerns	Low	Low	Some concerns
Arcanjo et al. 2022 (20)	Low	Some concerns	Low	Low	Some concerns
Park et al. 2024 (24)	Low	Low	Low	Low	Low

TABLE 4 - ROBINS-I (non-randomized/quasi-experimental)

Author, Year	Confounding	Participant selection	Measurement of outcomes	Overall ROBINS-I
Shahzadi et al. 2023 (21)	Moderate	Low	Moderate	Moderate
Akram et al. 2024 (22)	Moderate	Low	Moderate	Moderate
Tan et al. 2024 (23)	Some confounding (non-RCT)	Low	Low–moderate	Some/moderate

and low back pain. In comparison to exercise therapy, a randomized study assessing lumbopelvic HVLA manipulation for nonspecific low back pain found considerably higher pain reduction and functional improvement at two weeks (24). Another study that compared stabilizing exercises and osteopathic manipulation for pelvic girdle dysfunction revealed that the manipulation group's discomfort and gait symmetry improved more quickly (27). A meta-analysis of manual therapy for persistent pelvic pain revealed modest evidence in favor of thrust manipulation for enhanced movement patterns and temporary analgesia (28). Although lumbar roll and modified SIMS techniques are not directly compared in these studies, the biomechanical principles match, providing external support for the findings of this review.

The effects on disability observed in our included trials are also consistent with contemporary literature. A parallel trial showed that targeted pelvic manipulation resulted in greater gains in functional mobility than stretching alone, while a study assessing integrated lumbopelvic manual therapy found significant decreases in ODI scores when compared with standard care (21). Because improper loading over the lumbopelvic region is strongly associated with dysfunction in SIJD, manipulative treatments that improve pelvic alignment or lessen SIJ discomfort may enable more effective motor strategies throughout daily activities.

There is also conflicting evidence about pelvic alignment and SIJ movement. Long-term structural correction is yet unknown, despite the fact that several included trials showed immediate positional alterations after manipulation—a finding supported by subsequent imaging and motion studies. According to a review, manipulation can temporarily change pelvic landmarks, although these effects are biomechanically insignificant and most likely mediated by neuromuscular rather than structural mechanisms (29). Despite obvious clinical improvement, another study that used ultrasound-based evaluations did not find any long-term alignment alterations following modification (10). Thus, the symptomatic benefits of lumbar roll and modified SIMS techniques may rely more on neurophysiological modulation than on durable anatomical repositioning. These proposed mechanisms remain theoretical and are not directly confirmed by the included clinical trials.

The high levels of patient satisfaction and minimal adverse events reported in this review are consistent with the broader literature, indicating that manipulative therapy for lumbopelvic conditions is safe when performed by trained clinicians. A safety review reported that SIJ manipulation carries a very low risk of significant adverse effects when proper screening and technique selection are followed (30). Overall, the findings of this review should be interpreted as indicative rather than definitive, given the methodological limitations and heterogeneity of the included studies.

Although a formal GRADE assessment was not performed, the overall certainty of evidence across outcomes can be considered low to moderate. This is primarily due to small sample sizes, heterogeneity in interventions and comparators, short follow-up durations, and methodological limitations identified in several trials. Outcomes related to short-term pain and disability reduction showed more consistent findings, whereas

evidence for long-term effects, biomechanical changes, and comparative effectiveness between techniques remains limited and uncertain.

Limitations

This review has several limitations. First, there is a lack of direct comparative trials between lumbar roll and modified SIMS techniques; therefore, any comparison presented in this review is based on indirect evidence and should be interpreted with caution. Second, the included studies involved heterogeneous populations, including conditions not exclusively diagnosed as SIJD. This clinical heterogeneity introduces indirectness and may affect both the internal validity and generalizability of the conclusions. Although these studies applied SIJ-targeted manipulation, their indirect clinical relevance may limit the specificity of conclusions. Third, the lack of standardized terminology and reporting of manipulation techniques across studies, which limited precise identification and fidelity assessment of lumbar roll and modified SIMS techniques. Fourth, significant heterogeneity existed across studies regarding diagnostic criteria, manipulative technique execution, treatment dosage, and comparator interventions, precluding meta-analysis. Fifth, many trials had small sample sizes and short follow-up periods, limiting the ability to assess long-term outcomes. The variations in reporting quality and incomplete blinding contributed to a moderate risk of bias across several studies. Sixth, a formal GRADE assessment of evidence certainty was not performed due to substantial heterogeneity in study designs, interventions, and outcome measures, as well as the absence of direct comparative trials. However, a narrative evaluation of evidence certainty suggests predominantly low to moderate confidence across reported outcomes. Lastly, it is difficult to make clear judgments regarding the relative superiority of these particular techniques due to the small number of trials that specifically identify lumbar roll or modified SIMS approaches.

Conclusion

The current evidence suggests both lumbar roll and modified SIMS manipulation treatments significantly reduce pain, disability, and functional mobility in individuals with SIJD in the short-term clinical benefits. No significant side effects were noted. Small sample sizes, methodological constraints, differences in diagnostic criteria, and brief follow-up periods between studies should all be taken into consideration when interpreting the findings, even though the overall direction of the data supports their therapeutic relevance. To verify comparative and long-term efficacy, more thorough randomized trials using established procedures are required. Given that technique classification was based on indirect interpretation of intervention descriptions and no direct comparative trials were available, the comparative findings of this review should be considered exploratory. Therefore, conclusions regarding specific technique effectiveness should be interpreted with caution, as the available evidence primarily reflects heterogeneous and non-standardized manual therapy approaches.

Disclosures

Conflict of interest: No potential conflict of interest was reported by the authors during any stage of this systematic review.

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All data presented in this systematic review were derived from previously published studies.

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