RESEARCH PAPER

# Clinical Diagnostic Tests for Sacroiliac Joint Dysfunction and Pain: A Systematic Review of Diagnostic Accuracy Studies

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***ABSTRACT***
**Background:** Sacroiliac joint dysfunction is the one of the commonest conditions which leads to low back pain. However, due to its complex anatomy and biomechanics its diagnosis is quite difficult. Previous literature although recommended some clinical diagnostic tests but there accuracy is still unclear. Therefore, the aim of present review was to identify the most reliable clinical diagnostic test tool in order to assess sacroiliac joint dysfunction.
**Methodology:** Three databases (PubMed, Cochrane library and PEDRO) was used to search the relevant articles. Various keywords related to sacroiliac joint dysfunctions and clinical/pain provocation test was used by using Boolean operators (AND/OR). The full text articles were taken from inception to till 2026. The included studies methodological quality was checked on the basis of QADAS-2 risk of bias tool.
**Results:** Eleven studies satisfied the requirements for inclusion. The most often studied tests were those that provoked pain, such as the thigh thrust, compression, distraction, FABER, and Gaenslen tests. With sensitivity ranging from 53% to 88% and specificity ranging from 16% to 81%, individual tests showed inconsistent diagnostic accuracy. With sensitivity ranging from 85% to 91% and specificity ranging from 76% to 82%, clusters of three or more positive provocation tests consistently showed improved diagnostic accuracy. Motion palpation tests demonstrated higher variability and less diagnostic value. The majority of the examined studies showed a low-to-moderate risk
**Conclusion:** There isn't a single clinical test that can accurately identify SIJ dysfunction on its own. Pain provocation test clusters offer the best diagnostic precision and ought to be used in standard clinical evaluation. It is necessary to conduct additional high-quality diagnostic accuracy investigations using defined reference standards.
**Keywords:** Sacroiliac joint dysfunction; Sacroiliac joint pain; Diagnostic accuracy; Pain provocation tests; Physical examination; Systematic review.
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## INTRODUCTION

One of the main causes of disability is now a days is low back pain. It has a significant negative impact on society and healthcare systems. The sacroiliac joint (SIJ), which accounts for 15–30% of cases of persistent low back pain and up to 40% of cases in patients after lumbar fusion surgery, has been identified as a major source of pain among low back pain population [1,2]. The SIJ is working as a link between lumbar spine and lower limb and helps in transmission of force. Therefore, in this the localized pain occurs in both regions like in the groin region, buttocks, lower limb and lumbar spine which sometimes mimics as discogenic pain/ low back pain [3,4]. SIJ is made up from the sacrum bone and ilium bone of pelvis. If there is any biomechanical alteration present in these two structures it will lead to SIJ dysfunction. So, due to its complex anatomy and biomechanics its diagnosis is somewhat difficult. Previous literature suggests some clinical/ pain provocation test but due to lack of gold standard

diagnostic test its diagnosis is still difficult. There are some other diagnostic tools available like X-Ray, CT scan, and MRI but due to their high costs; their uses are still limited. Especially in the cases of mechanical SIJ dysfunctions where the clinical symptoms, and functional limitations are not in line with the result of radiological images [5,6].

In the literature, there are several pain provocation tests which mechanically stresses the SIJ and reproduces patient symptoms like FABER test, compression and distraction test, thigh thrust test, Newton and Yeoman test for assessing SIJ dysfunction. However, their sensitivity and specificity differ in different studies. Some literature suggested the use of multiple tests over single one to assess SIJ dysfunction [7,8,9]. When compared to individual tests alone, Laslett et al. showed that the use of a cluster of positive SIJ provocation tests greatly increased diagnostic accuracy [10]. In the same way, test combinations may offer more diagnostic confidence than any one technique, according to van der Wurff et al [11]. Several authors have suggested using multiple pain provocation tests in conjunction to get around these restrictions [12,13]. Under fluoroscopic or computed CT guidance, local anesthetic is injected into the sacroiliac joint during diagnostic blocks; substantial reduction in pain indicates SIJ involvement. Diagnostic blocks are widely used, but they have a number of drawbacks, such as expense, procedural invasiveness, technical unpredictability, and the possibility of false-positive results [13,14,15]. Variability in diagnostic results is also influenced by differences in injection methods, positive response criteria, and the use of single versus dual blocks.

So, a need to do a thorough assessment of the available data is necessary given the frequency of SIJD and the continuous ambiguity around the best diagnostic techniques. Previous literature examining the diagnostic accuracy, validity & reliability; however, the results are debatable [7,10,11,16]. There is also heterogeneity found in the diagnostic criteria, patient's characteristics and reference standard used which makes it further difficult to know the best clinical assessment test for SIJ dysfunction. For this a best compilation of studies in the form of systematic review and meta-analysis should be needed. One of the objectives of this review was to present a meta-analysis. However, due to heterogeneity present in the patient's characteristics, outcome measure used, index test and reference tests [16,17]. In these situations, conducting a meta-analysis could produce inaccurate summary estimates and possibly mask clinically significant variations across diagnostic techniques [18]. As a result, the current investigation was limited to a qualitative synthesis and systematic assessment of the available data.

Therefore, present review aims to support evidence-based clinical decision-making in the management of sacroiliac joint dysfunction and to help clinicians, researchers, and rehabilitation professionals understand the diagnostic value of commonly used sacroiliac joint assessment procedures by methodically synthesizing the current evidence.

**Methodology:**

The present review was written on the basis of Preferred reporting items for Systematic Reviews and Meta-Analysis of Diagnostic Test Accuracy [19].

**Protocol and Registration:**

This review was register in PROSPERO with a registration ID: CRD420261436386

**Eligibility Criteria:**

Inclusion Criteria:

Studies that assessed the diagnostic accuracy, validity, reliability, sensitivity, specificity, or clinical value of tests used to diagnose SIJ pain or SIJD in human subjects were included. Original research papers that were published in peer-reviewed journals and are in English language and included prospective, retrospective, cross-sectional, cohort, and diagnostic accuracy investigations were incorporated in this review. Studies having individual pain provocation tests (e.g., FABER, Gaenslen, compression, distraction, thigh thrust, sacral thrust, Yeoman, and Newton tests), studies using test clusters like the Laslett cluster, and diagnostic sacroiliac joint blocks used as reference standards were included.

Exclusion Criteria:

Case reports, case series, conference abstracts, narrative reviews, systematic reviews, editorials, letters to the editor, animal studies, and research that did not report diagnostic results pertinent to SIJD were all excluded.

**Information Sources:**

Three electronic databases were used for a thorough literature search: PEDro (Physiotherapy Evidence Database), Cochrane Library, and PubMed. Articles were searched from the inception to July, 2026. To locate potentially relevant articles that might not have been discovered by the these searches, the reference lists of eligible research were also manually examined.

**Search:**

The search technique was created to find research on diagnostic tests for pain and sacroiliac joint pain and dysfunction. Using terms associated with sacroiliac joint dysfunction and diagnostic testing, such as pain provocation tests, diagnostic blocks, clinical examination techniques, and diagnostic accuracy metrics, a thorough search strategy was created. Exact Keywords used during searching

along with search results were described in Table 1.

**Table 1: Search Strategy**

| Keywords | PubMed results | Cochrane results |
|---|---|---|
| ((((((((((((sacroiliac joint dysfunction[Title/Abstract]) OR (SIJ dysfunction[Title/Abstract])) OR (SI joint dysfunction[Title/Abstract])) OR (sacroiliac joint pain[Title/Abstract])) OR (SIJ pain[Title/Abstract])) OR (sacroiliac dysfunction[Title/Abstract])) OR (SI dysfunction[Title/Abstract])) OR (sacroiliac pain[Title/Abstract])) OR (SI pain[Title/Abstract])) OR (sacroiliac joint pain syndrome[Title/Abstract])) OR (SIJ pain syndrome[Title/Abstract])) OR (sacroiliac pain syndrome[Title/Abstract])) OR (SI pain syndrome[Title/Abstract])) OR (sacroiliac joint pain dysfunction[Title/Abstract])) OR (SIJ pain dysfunction[Title/Abstract]) | 1168 | 1189 |
| ((((((((((((((((((((((((pain provocation test[Title/Abstract]) OR (pain provocative test[Title/Abstract])) OR (sacroiliac diagnostic block[Title/Abstract])) OR (sacroiliac nerve block[Title/Abstract])) OR (sacroiliac nerve blocks[Title/Abstract])) OR (clinical tests[Title/Abstract])) OR (diagnostic accuracy[Title/Abstract])) OR (sensitivity[Title/Abstract])) OR (specificity[Title/Abstract])) OR (sacroiliac joint block[Title/Abstract])) OR (diagnostic block[Title/Abstract])) OR (diagnostic test[Title/Abstract])) OR (provocation test[Title/Abstract])) OR (physical examination[Title/Abstract])) OR (screening test[Title/Abstract])) OR (manual examination[Title/Abstract])) OR (Patrick test[Title/Abstract])) OR (FABER test[Title/Abstract])) OR (Gaenslen test[Title/Abstract])) OR (Distraction test[Title/Abstract])) OR (sacral distraction test[Title/Abstract])) OR (compression test[Title/Abstract])) OR (thigh thrust test[Title/Abstract])) OR (sacral thrust test[Title/Abstract])) OR (Yeoman test[Title/Abstract])) OR (Newton test[Title/Abstract])) OR (Laslett cluster[Title/Abstract]) | 1645369 | 306472 |

| | | |
|---|---|---|
| ((((((((((((((sacroiliac joint dysfunction[Title/Abstract]) OR (SIJ dysfunction[Title/Abstract])) OR (SI joint dysfunction[Title/Abstract])) OR (sacroiliac joint pain[Title/Abstract])) OR (SIJ pain[Title/Abstract])) OR (sacroiliac dysfunction[Title/Abstract])) OR (SI dysfunction[Title/Abstract])) OR (sacroiliac pain[Title/Abstract])) OR (SI pain[Title/Abstract])) OR (sacroiliac joint pain syndrome[Title/Abstract])) OR (SIJ pain syndrome[Title/Abstract])) OR (sacroiliac pain syndrome[Title/Abstract])) OR (SI pain syndrome[Title/Abstract])) OR (sacroiliac joint pain dysfunction[Title/Abstract])) OR (SIJ pain dysfunction[Title/Abstract])) AND ((((((((((((((((((((((((pain provocation test[Title/Abstract]) OR (pain provocative test[Title/Abstract])) OR (sacroiliac diagnostic block[Title/Abstract])) OR (sacroiliac nerve block[Title/Abstract])) OR (sacroiliac nerve blocks[Title/Abstract])) OR (clinical tests[Title/Abstract])) OR (diagnostic accuracy[Title/Abstract])) OR (sensitivity[Title/Abstract])) OR (specificity[Title/Abstract])) OR (sacroiliac joint block[Title/Abstract])) OR (diagnostic block[Title/Abstract])) OR (diagnostic test[Title/Abstract])) OR (provocation test[Title/Abstract])) OR (physical examination[Title/Abstract])) OR (screening test[Title/Abstract])) OR (manual examination[Title/Abstract])) OR (Patrick test[Title/Abstract])) OR (FABER test[Title/Abstract])) OR (Gaenslen test[Title/Abstract])) OR (Distraction test[Title/Abstract])) OR (sacral distraction test[Title/Abstract])) OR (compression test[Title/Abstract])) OR (thigh thrust test[Title/Abstract])) OR (sacral thrust test[Title/Abstract])) OR (Yeoman test[Title/Abstract])) OR (Newton test[Title/Abstract])) OR (Laslett cluster[Title/Abstract] | 204 | 356 |

**Study Selection:**
Duplicate citations were eliminated before screening, and all records found via database searching were checked. Titles and abstracts were assessed for relevance using the predetermined eligibility criteria by two independent reviewers. After that, full-text publications were obtained and evaluated for inclusion. Discussion was used to settle any disputes that arose during the screening or eligibility evaluation process. A third reviewer was consulted when a discussion could not be reached.

**Data Collection Process:**
Two reviewers independently extracted the data. Each included study's pertinent data was taken out and double-checked for accuracy. Reviewers' disagreements were settled by re-examining and discussing the original articles. Additional information was gathered from study appendices or other materials as needed.

**Definitions for data extraction:**
Each included study's author or authors, year of publication, country of study, study design, participant characteristics, sample size, diagnostic test or tests evaluated, reference standard used were all extracted. Sensitivity, specificity were all included in the diagnostic accuracy data.

**Risk of Bias:**
The Quality Assessment of Diagnostic Accuracy Studies-2 (QUADAS-2) instrument was used to evaluate the methodological quality of the included studies. This technique assesses bias risk in four areas: flow and timing, index test, reference standard, and patient selection. The QUADAS-2 guidance document classified each domain as having a low, high, or uncertain risk of bias. Two reviewers carried out the evaluation independently, and disputes were settled by conversation until an agreement was reached.

**Diagnostic Accuracy Measures:**

The sensitivity and specificity of the examined diagnostic tests were the main diagnostic accuracy metrics of interest. A special focus was on comparing the diagnostic efficacy of specific provocation tests and test combinations to recognized reference standards, such as image-guided sacroiliac joint blocks.

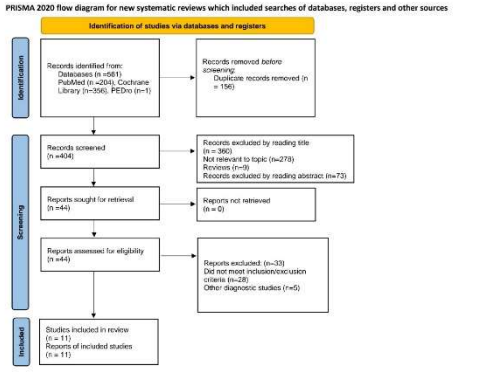


**Figure 1: PRISMA Flow Chart on Clinical Diagnostic Tests of Sacroiliac Joint Dysfunction**

**Synthesis of Result:**

Following PRISMA-DTA guidelines, a qualitative synthesis of the listed studies was conducted. The initial objective was to quantify aggregate estimates of diagnostic accuracy through a meta-analysis. The included studies did, however, exhibit considerable methodological variety, including differences in patient demographics, diagnostic criteria, index tests, reference standards, examiner training, result reporting, and statistical techniques. Additionally, a number of studies lacked the data necessary to create the standardized two-by-two contingency tables needed for diagnostic meta-analysis. As a result, a narrative synthesis was carried out and quantitative pooling was deemed unsuitable. The diagnostic tests assessed, reported diagnostic accuracy metrics, methodological quality, and overall clinical utility in the diagnosis of sacroiliac joint dysfunction were used to summarize the results.

**Results:**

**Study Selection:**Through database searches (PubMed, PEDro, and Cochrane Library), 561 records were found. 404 records were subjected to title and abstract screening after 156 duplicates were eliminated. 360 of these studies were eliminated because they either lacked diagnostic accuracy results or did not examine clinical diagnostic tests for SIJ dysfunction. The eligibility of forty-four full-text articles was evaluated. For a variety of reasons, including review articles, insufficient reference standards, and a lack of diagnostic accuracy data, thirty-three studies were eliminated. In the end, eleven research were included in the qualitative synthesis since they satisfied the eligibility requirements. Eight studies supplied enough sensitivity and specificity data to be included in the synthesis of diagnostic accuracy (Figure 1).

**Study Characteristics:**

The features of the research that are part of this systematic review are compiled in Table 1. A total of eleven studies published between 1994 and 2021 were included, comprising both diagnostic accuracy and reliability investigations of clinical tests for SIJ dysfunction and pain. New Zealand, the US, Iran, Denmark, Turkey, Germany, and Pakistan were among the nations where the research was carried out. People with chronic low back pain, pelvic girdle pain, suspected sacroiliac joint dysfunction, or sacroiliitis made up the majority of the sample sizes, which varied from 48 to more than 200. Pain provocation tests, such as the thigh thrust, FABER, distraction, compression, Gaenslen, and sacral thrust tests, were the most commonly assessed clinical tests. Additionally, a number of research looked at functional evaluation techniques including motion palpation testing. Fluoroscopically guided sacroiliac joint injections, diagnostic SIJ blocks, double anesthetic blocks, magnetic resonance imaging (MRI), and clinical examination results were among the diagnostic reference standards that varied significantly between studies (Table 2).

In terms of study design, participant characteristics, index tests, and reference standards, the included studies showed significant heterogeneity overall. However, the most frequently studied and clinically significant examination techniques for the evaluation of SIJ dysfunction and pain were consistently shown to be pain provocation tests.

**Table 2. Characteristics of Included Studies**

| Study | Country | Design | Sample | Population | Index Test(s) | Reference Standard |
|---|---|---|---|---|---|---|
| Laslett & Williams, 1994 [20] | New Zealand | Reliability study | 51 | Low back pain patients | Distraction, Compression, Thigh Thrust, Gaenslen | Clinical examination |
| Dreyfuss et al., 1996 [21] | United States | Diagnostic accuracy | 85 | Chronic low back pain patients | Thigh Thrust, FABER, Gaenslen, Sacral Thrust | Diagnostic SIJ block |
| Slipman et al., 1998 [22] | United States | Diagnostic accuracy | 50 | Suspected SIJ syndrome patients | Provocation maneuvers | Fluoroscopic SIJ injection |
| Kokmeyer et al., 2002 [23] | United States | Reliability study | 78 | Individuals with/without low back pain | Cluster of 5 provocation tests | Clinical diagnosis |
| Laslett et al., 2005 [24] | New Zealand | Diagnostic accuracy | 48 | Chronic low back pain patients referred for SIJ block | Provocation test cluster | Double anesthetic block |
| Arab et al., 2009 [25] | Iran | Diagnostic validity | 65 | Low back/pelvic pain patients | Motion and pain provocation tests | Clinical diagnosis |
| Arnbak et al., 2017 [26] | Denmark | Diagnostic Accuracy | 117 | Patients with suspected sacroiliitis | SIJ provocation tests | MRI-confirmed sacroiliitis |
| Telli et al., 2018 [27] | Turkey | Diagnostic Accuracy | 156 | SIJ dysfunction patients | FABER, Compression, Distraction, Thigh Thrust, Gaenslen | Clinical diagnosis |
| von Heymann et al., 2018 [28] | Germany | Reliability Study | 51 | Patients with SIJ dysfunction | Functional and pain provocation tests | Clinical examination |
| Sartaj et al., 2020 [29] | Pakistan | Diagnostic Accuracy | 48 | Chronic low back pain patients | Provocation and motion palpation tests | Diagnostic SIJ block |
| Mekhail et al., 2021 [30] | USA | Diagnostic Accuracy | 200+ | Suspected SIJ pain patients | Three diagnostic clinical tests | Diagnostic SIJ injection |

**Risk of Bias:**

The QUADAS-2 tool was used to evaluate the methodological quality of the included studies in four domains: flow and timing, index test, reference standard, and patient selection (Table 3). The majority of studies showed a minimal risk of bias overall, demonstrating appropriate methodological rigor in the assessment of diagnostic tests for sacroiliac joints (SIJ). Five studies were found to have an overall low risk of bias across the majority of QUADAS-2 domains: Laslett and Williams (1994), Dreyfuss et al. (1996), Laslett et al. (2005), Arnbak et al. (2017), Sartaj et al. (2020), and Mekhail et al. (2021). Slipman et al. (1998), Kokmeyer et al. (2002), von Heymann et al. (2018) showed moderate risk of bias due to unclear patient selection procedure, and not using the gold standard diagnostic reference test. Arab et al. (2009) showed high risk of bias due to unclear information regarding index test and reference test used. Telli et al. (2018) showed an overall low risk of bias, however, its diagnosis is made on the basis of clinical criteria only.

**Table 3. QUADAS-2 Assessment**

| Study | Patient Selection | Index Test | Reference Standard | Flow & Timing | Overall Risk |
|---|---|---|---|---|---|
| Laslett & Williams 1994 [20] | Low | Low | Unclear | Low | Low |

| | | | | | |
|---|---|---|---|---|---|
| Dreyfuss et al. 1996 [21] | Low | Low | Low | Low | Low |
| Slipman et al. 1998 [22] | Unclear | Low | Low | Low | Moderate |
| Kokmeyer et al. 2002 [23] | Low | Low | High | Low | Moderate |
| Laslett et al. 2005 [24] | Low | Low | Low | Low | Low |
| Arab et al. 2009 [25] | Unclear | Unclear | High | Low | High |
| Arnbak et al., 2017 [26] | Low | Low | Low | Low | Low |
| Telli et al., 2018 [27] | Low | Low | Moderate | Low | Low |
| von Heymann et al., 2018 [28] | Moderate | Low | Moderate | Low | Moderate |
| Sartaj et al., 2020 [29] | Low | Low | Low | Low | Low |
| Mekhail et al., 2021 [30] | Low | Low | Low | Low | Low |

**Results of Individual Studies:**

*Diagnostic Accuracy of Individual Clinical Tests*

There is heterogeneity present in the diagnostic clinical test for assessing SIJ (Table 4). Previous literature showed the sensitivity of clinical tests however, Dreyfuss et al., stated the low specificity of individual clinical tests. Later studies by Laslett et al., Telli et al., Sartaj et al., and Mekhail et al. consistently demonstrated that many positive pain provocation test combinations produced better diagnostic results than single tests. The compression and distraction tests showed somewhat better specificity, whereas the thigh thrust test generally showed the best sensitivity among the separate methods. Reliability-focused studies, such as Laslett and Williams (1994), Kokmeyer et al. (2002), and von Heymann et al. (2018), were unable to be statistically compared with diagnostic validity studies since they did not offer diagnostic accuracy measures. For the diagnosis of sacroiliac joint dysfunction and pain, the data currently available favours the use of clusters of pain provocation tests over individual clinical testing.

**Table 4. Diagnostic Accuracy of Individual Clinical Tests**

| Study | Clinical Test(s) Evaluated | Sensitivity (%) | Specificity (%) |
|---|---|---|---|
| Dreyfuss et al. (1996) | Thigh Thrust | 36 | 50 |
| Dreyfuss et al. (1996) | FABER | 69 | 16 |
| Dreyfuss et al. (1996) | Gaenslen | 71 | 26 |
| Dreyfuss et al. (1996) | Sacral Thrust | 53 | 29 |
| Slipman et al. (1998) | Provocation Maneuvers (Composite) | 85 | 76 |
| Laslett et al. (2005) | ≥3 Positive Provocation Tests | 91 | 78 |
| Laslett et al. (2005) | Thigh Thrust | 88 | 69 |
| Laslett et al. (2005) | Compression | 69 | 81 |
| Laslett et al. (2005) | Distraction | 60 | 81 |
| Arnbak et al. (2017) | Gaenslen Test | 53–60 | 71–75 |
| Arnbak et al. (2017) | Thigh Thrust Test | 55–62 | 70–76 |
| Arnbak et al. (2017) | Long Dorsal Ligament Test | 59–65 | 67–72 |
| Telli et al. (2018) | FABER Test | 72 | 67 |
| Telli et al. (2018) | Compression Test | 74 | 81 |
| Telli et al. (2018) | Distraction Test | 70 | 79 |
| Telli et al. (2018) | Thigh Thrust Test | 82 | 75 |
| Telli et al. (2018) | Gaenslen Test | 68 | 72 |
| Sartaj et al. (2020) | Provocation Test Cluster | 88 | 82 |
| Sartaj et al. (2020) | Motion Palpation Tests | 52 | 45 |
| Mekhail et al. (2021) | Three Clinical Diagnostic Tests Combined | 89 | 79 |

**Synthesis of Results:**

Each sacroiliac joint clinical test and test cluster reported in the included studies is compiled in Table 5. With sensitivity ranging from 55% to 88% and specificity values between 69% and 76%, the thigh thrust test was the most consistently high diagnostic performance. With specificity scores typically over 79%, the compression and distraction tests demonstrated moderate-to-high diagnostic performance. The FABER test showed very varied specificity across investigations, but modest sensitivity. In a similar way, the Gaenslen test's sensitivity and specificity varied significantly. Clusters of pain provocation

tests showed the best diagnostic performance, especially when three or more tests were positive. Provocation test clusters showed better diagnostic utility than individual tests across four investigations, with sensitivity values ranging from 85% to 91% and specificity values ranging from 76% to 82%. Motion palpation tests, on the other hand, consistently showed more variability and poorer diagnostic performance, indicating limited utility as stand-alone diagnostic techniques.

**Table 5. Summary of Diagnostic Performance**

| Test | Number of Studies | Sensitivity Range (%) | Specificity Range (%) |
|---|---|---|---|
| Thigh Thrust | 4 | 55–88 | 69–76 |
| FABER (Patrick's Test) | 2 | 69–72 | 16–67 |
| Compression Test | 2 | 69–74 | 81 |
| Distraction Test | 2 | 60–70 | 79–81 |
| Gaenslen Test | 3 | 53–71 | 26–75 |
| Sacral Thrust | 1 | 53 | 29 |
| Long Dorsal Ligament Test | 1 | 59–65 | 67–72 |
| Motion Palpation Tests | 2 | 52–65 | 45–60 |
| Provocation Test Cluster (≥3 Positive Tests) | 4 | 85–91 | 76–82 |
| Three Clinical Tests Combined | 1 | 89 | 79 |

**Additional Analysis:**

The comparison between single and cluster test was done in additional analysis. The mean sensitivity and specificity of individual clinical tests were 66.8% and 64.5% respectively especially the FABER tests and Gaenslen tests specificity varies among different studies. The diagnostic efficacy of provocation test clusters and individual sacroiliac joint clinical tests was shown in Table 6. With a mean sensitivity of almost 67% and a mean specificity of roughly 65%, individual tests showed modest diagnostic accuracy. Individual tests exhibited a great deal of variation, especially the FABER and Gaenslen tests, which had variable specificity between investigations. On the other hand, pain provocation test clusters showed significantly better diagnostic performance. Test clusters with three or more positive provocation tests had a mean sensitivity of around 88% and a mean specificity of about 79% throughout the included diagnostic accuracy studies.

**Table 6. Comparison of Single Tests versus Test Clusters**

| Diagnostic Method | Mean Sensitivity (%) | Mean Specificity (%) |
|---|---|---|
| Individual Clinical Tests | 66.8 | 64.5 |
| Pain Provocation Test Cluster (≥3 Positive Tests) | 88.0 | 79.0 |
| Three Clinical Tests Combined (Mekhail et al., 2021) | 89.0 | 79.0 |

**Discussion:**

**Summary of Evidence:**

The diagnostic precision and clinical value of widely used clinical tests for SIJ pain and dysfunction were assessed in this systematic review. The results consistently showed that pain provocation tests are more useful for diagnosing SIJ-related pain than motion palpation or functional mobility testing. However, none of the clinical test showed sufficient diagnostic accuracy. The result of our systematic review was also in line with the previous systematic reviews. However, direct comparison cannot made because the current review included recent researches and also reported both conventional and modern diagnostic methods and showed high precision in combination of pain provocation test rather than individual one whereas previous literatures only focus on validity of individual pain provocation tests. There was a systematic review which examining the diagnostic validity of clinical tests and concluded that when individual tests were assessed alone their diagnostic value is low as compared to cluster tests [31]. Another review was assessing the diagnostic precision of clinical tests and stated the same that combination of clinical test is more accurate than the individual clinical tests [32]. We also concluded the same thing that individual clinical tests alone don't show better results which is in line with our study. Similarly, another study reported that motion palpation tests are less effective than clinical pain provocation tests [33]. This result is also in line with the result of our study. We also found that motion palpation tests are clinically less effective than pain provocation tests. Therefore, these can be used cautiously. Instead of using than main diagnostic tool one can used them as an additional

diagnostic tool for further checking the efficacy.

**Clinical Implications**

The result of our review reported the use of cluster provocation tests in clinicals rather than individual ones and we are not suggesting the use of motion palpation tests in assessing sacroiliac joint dysfunctions.

**Limitations:**

- The first and foremost limitation of present review is that we are not able to present the result in the form of meta-analysis due to heterogeneity present in the patient's selection, diagnostic criteria used to assess SIJ dysfunctions.
- Another one is that some of the studies assessing the reliability of clinical tests instead of their diagnostic values therefore, statistics for sensitivity and specificity were not easily accessible.
- There is a lack of gold standard reference tool for interpreting the diagnostic accuracy.
- Last but not least some included studies are on low sample size.

**Conclusions:**

The findings of this comprehensive review demonstrate that clusters of pain provocation tests are the most reliable clinical technique for identifying sacroiliac joint dysfunction. As an independent diagnostic tool, no single clinical test demonstrated sufficient diagnostic accuracy. Instead, the combination of multiple positive provocation tests remains the most evidence-based examination method, providing greater diagnostic confidence. However, motion palpation tests should be considered additional evaluation techniques rather than primary diagnostic methods due to their low diagnostic value.

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