

Discordance Among Systematic Reviews of Platelet-Rich Plasma for Meniscal Repair: A Meta-Epidemiological Study

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ADMINISTRATIVE INFORMATION**Support** - No external funding.**Review Stage at time of this submission** - Data extraction.**Conflicts of interest** - None declared.**INPLASY registration number:** INPLASY202670082**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 21 July 2026 and was last updated on 21 July 2026.**INTRODUCTION**

Study aim The aim of this methodological study is to investigate systematic reviews evaluating platelet-rich plasma as an adjunct to meniscal repair. Specifically, the study will characterize methodological differences across reviews, quantify overlap among included primary studies, assess the incremental contribution of successive reviews, classify the direction of their conclusions, and identify methodological factors potentially associated with discordance between review conclusions.

Background Meniscal preservation is a central principle of contemporary knee surgery because the meniscus contributes to load distribution, joint stability, shock absorption, and cartilage protection. Whenever technically feasible, meniscal repair is therefore preferred over meniscectomy. However, the limited healing capacity of poorly vascularized meniscal regions has encouraged the use of biological augmentation strategies, including platelet-rich plasma (PRP).

During recent years, multiple systematic reviews and meta-analyses have evaluated PRP augmentation for meniscal repair. Despite frequently relying on substantially overlapping sets of primary studies, these reviews have reached heterogeneous conclusions regarding treatment failure, healing, functional outcomes, and the clinical relevance of PRP. Such discordance may reflect differences in eligibility criteria, study designs, outcome prioritization, risk-of-bias assessment, statistical methods, and interpretation of evidence.

The proliferation of systematic reviews addressing the same clinical question may not necessarily represent the production of new knowledge. Instead, repeated syntheses of an essentially unchanged evidence base may result in redundancy, conflicting recommendations, and research waste. Meta-epidemiological methods are suitable for examining this phenomenon because systematic reviews, rather than individual patients, are treated as the unit of analysis.

Rationale Although several systematic reviews have assessed PRP augmentation in meniscal repair, it remains unclear whether their divergent conclusions arise from the inclusion of substantially different primary studies or from differences in methodological decisions and interpretation. Quantifying overlap among reviews is necessary to determine the extent to which successive publications are based on the same underlying evidence.

The corrected covered area provides an objective measure of overlap across systematic reviews. In addition, evaluating the number of previously uncited primary studies introduced by each new review allows the incremental contribution of the secondary literature to be assessed over time. Comparing these measures with review eligibility criteria, included study designs, outcomes, quality-assessment methods, and conclusion direction may help explain why reviews based on a largely shared evidence base reach different recommendations.

This study may assist clinicians in critically interpreting apparently conflicting systematic reviews and may help researchers determine whether additional evidence syntheses are justified. It may also contribute to reducing redundant reviews and encouraging the development of new systematic reviews only when updated primary evidence or a clearly distinct methodological question is available.

METHODS

Search strategy PubMed/MEDLINE, Embase, and Scopus were searched from database inception to July 21, 2026. Controlled vocabulary, including Medical Subject Headings (MeSH) and Emtree terms, was combined with free-text terms related to platelet-rich plasma, meniscal repair, meniscus surgery, systematic reviews, and meta-analyses.

The search strategy combined concepts representing platelet-rich plasma and meniscal repair with methodological filters or terms identifying systematic reviews and meta-analyses. Representative terms included “platelet-rich plasma,” “platelet rich plasma,” “PRP,” “platelet concentrate,” “meniscus,” “meniscal,” “meniscus repair,” “meniscal repair,” “systematic review,” and “meta-analysis.” Boolean operators, truncation, and database-specific controlled vocabulary were adapted to each database.

No restriction based on publication date was applied. Reviews published in English and other

languages were eligible when sufficient information was available for assessment. Reference lists of eligible reviews were also examined to identify potentially relevant publications not retrieved by the electronic searches. Search results were exported, combined, and deduplicated before screening.

Eligibility criteria Types of studies: Systematic reviews, with or without meta-analysis, assessing PRP as an adjunct to meniscal repair in humans will be eligible. Reviews evaluating multiple biological augmentation strategies will be included when results specifically related to PRP can be identified separately. An overview of systematic reviews may be included for methodological characterization and conclusion analysis but will not contribute directly to the primary-study citation matrix or overlap calculation.**

Concept: The principal concept is the methodological characteristics and conclusions of systematic reviews evaluating platelet-rich plasma augmentation for meniscal repair. Relevant characteristics include protocol registration, eligibility criteria, inclusion of randomized and observational studies, databases searched, search dates, risk-of-bias tools, quantitative synthesis, use of GRADE, outcomes assessed, and conclusion direction.**

Context: Reviews involving patients undergoing surgical repair of meniscal tears, with PRP administered as an adjunct to the repair procedure, will be eligible. Reviews focused exclusively on PRP for nonoperative meniscal lesions, intra-articular treatment without meniscal repair, meniscectomy, ligament reconstruction without separable meniscal-repair data, or unrelated orthopedic conditions will be excluded.**

Exclusion criteria: Primary studies, narrative reviews, scoping reviews, editorials, letters, conference abstracts without sufficient data, methodological papers without an eligible clinical review, and publications focused on interventions other than PRP without separately extractable PRP results will be excluded.

Data extraction Data will be extracted using a standardized form. Extracted variables will include first author, publication year, journal, review scope, protocol registration, databases and search dates, eligibility criteria, number and design of included primary studies, use of meta-analysis, risk-of-bias or methodological-quality tools, use of GRADE, outcomes assessed, main findings, and authors' conclusions.

For each eligible review, the primary studies included will be identified and entered into a citation matrix. Study identity will be verified using authorship, publication year, title, journal, sample characteristics, and other bibliographic information to avoid treating duplicate reports as independent studies. Data will be checked for consistency before analysis.

Outcome definitions The primary methodological outcomes will be:

1. Evidence overlap: quantified using the corrected covered area (CCA), based on the number of citation occurrences, unique primary studies, and systematic reviews included in the citation matrix.**
2. Incremental contribution: defined as the number of primary studies first introduced by each systematic review compared with chronologically earlier eligible reviews.**
3. Conclusion direction: classified as favorable, favorable with reservations, neutral, or unfavorable toward PRP augmentation.**

Secondary outcomes will include methodological differences involving protocol registration, randomized-trial restriction, inclusion of observational studies, meta-analysis, risk-of-bias assessment, GRADE use, outcome prioritization, and interpretation of evidence.

Strategy of data synthesis / Statistical analysis

Study characteristics will be summarized descriptively using tables and graphical displays. A citation matrix will relate each systematic review to its included primary studies. Overlap will be quantified using the corrected covered area: $CCA = (N - r)/(rc - r)$, where N is the total number of primary-study occurrences, r is the number of unique primary studies, and c is the number of reviews included in the calculation.

Reviews will be ordered chronologically. Incremental contribution will be calculated as the number of primary studies not included in any chronologically earlier review. Conclusion direction will be classified using predefined criteria as favorable, favorable with reservations, neutral, or unfavorable.

Methodological characteristics will be compared descriptively across conclusion categories. Because of the limited number of eligible reviews and the exploratory meta-epidemiological design, no formal causal inference is planned. Findings will

be interpreted as descriptive associations rather than statistically confirmed determinants of review conclusions.

Country(ies) involved Brazil.

Other relevant information This is a methodological and meta-epidemiological study in which systematic reviews are the unit of analysis. No individual patient data will be collected. One overview of reviews may be included in the methodological characterization and conclusion analysis but excluded from the citation matrix and CCA calculation because it does not directly include primary studies.

The registration is retrospective: searches, selection, data extraction, analyses, and manuscript preparation were completed before protocol registration. This information is disclosed to ensure transparency.

Keywords platelet-rich plasma; meniscal repair; systematic reviews; meta-epidemiology; evidence overlap; research waste.

Dissemination plans The findings will be submitted for presentation at a national orthopedic scientific congress and may subsequently be submitted as a full manuscript to a peer-reviewed journal. Results may be presented as an oral communication or electronic poster. The study may also be disseminated through scientific meetings and academic channels. No individual patient data or confidential information will be reported. platelet-rich plasma; meniscal repair; systematic reviews; meta-epidemiology; evidence overlap; research waste.

Contributions of each author

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