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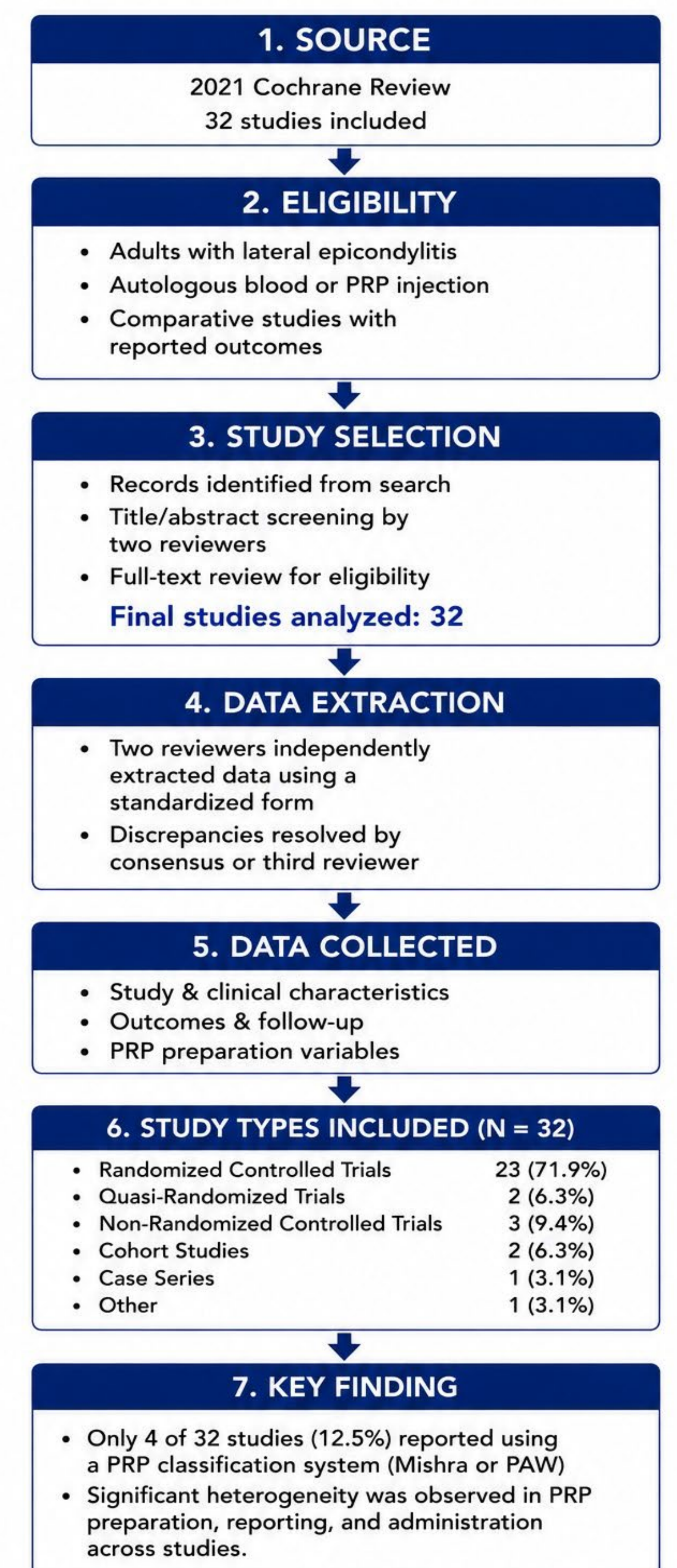
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Introduction

Platelet-rich plasma (PRP) is an autologous blood product with a high concentration of platelets used to deliver growth factors and cytokines to promote tissue healing in musculoskeletal conditions, including lateral epicondylitis (tennis elbow). Although a 2021 Cochrane review found no clear benefit of PRP or autologous blood injections for lateral elbow pain, a major limitation in the literature is the lack of standardization in PRP preparation reporting, including variability in preparation techniques, platelet concentration measurements (Figure 2), and final product composition. To address this variability, classification systems such as Mishra (2012) and PAW (2012) were developed to standardize PRP based on platelet concentration, leukocyte content, and activation status. The purpose of this project is to evaluate the number of studies in the 2021 Cochrane review that included a PRP classification system, providing clarification regarding conclusions drawn from a heterogeneous compilation of studies.

Methods



Preparation Process

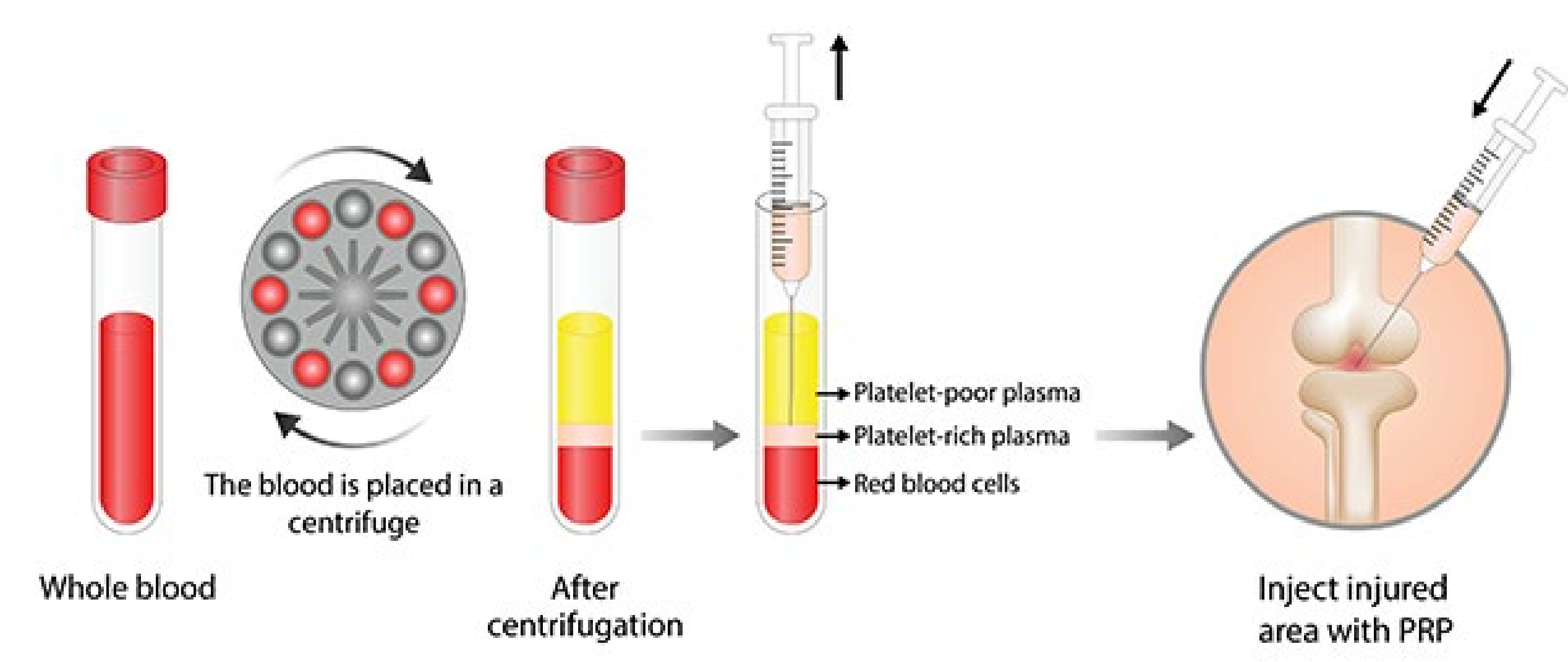


Image 1: Processing of whole blood for PRP preparation and injection.

Results

Of the studies included in the Cochrane meta-analysis, no single PRP classification system was consistently utilized across trials. Only 4 of 32 studies reported using a defined classification system for PRP preparation (Figure 1).

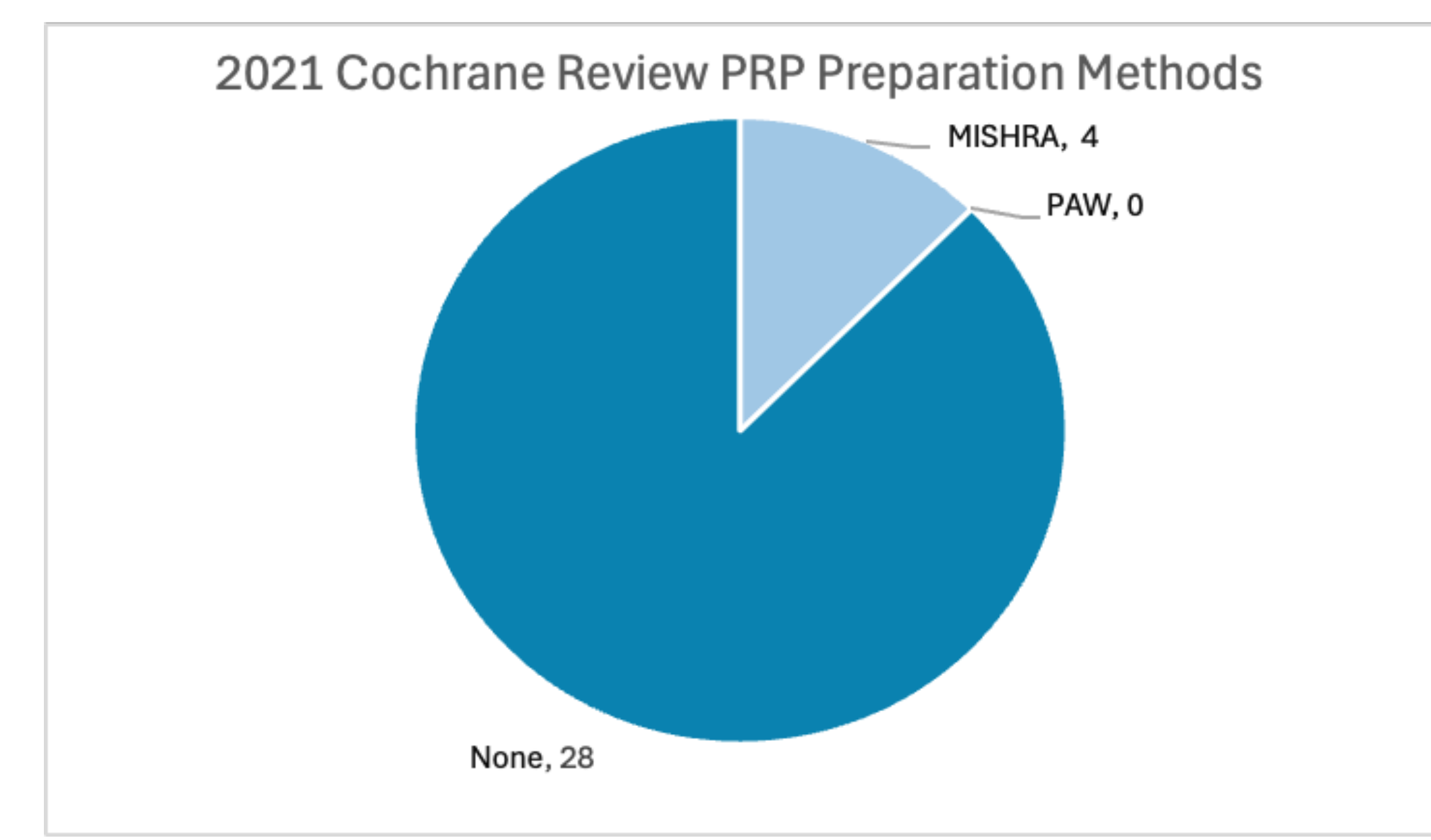


Figure 1
Platelet Concentration

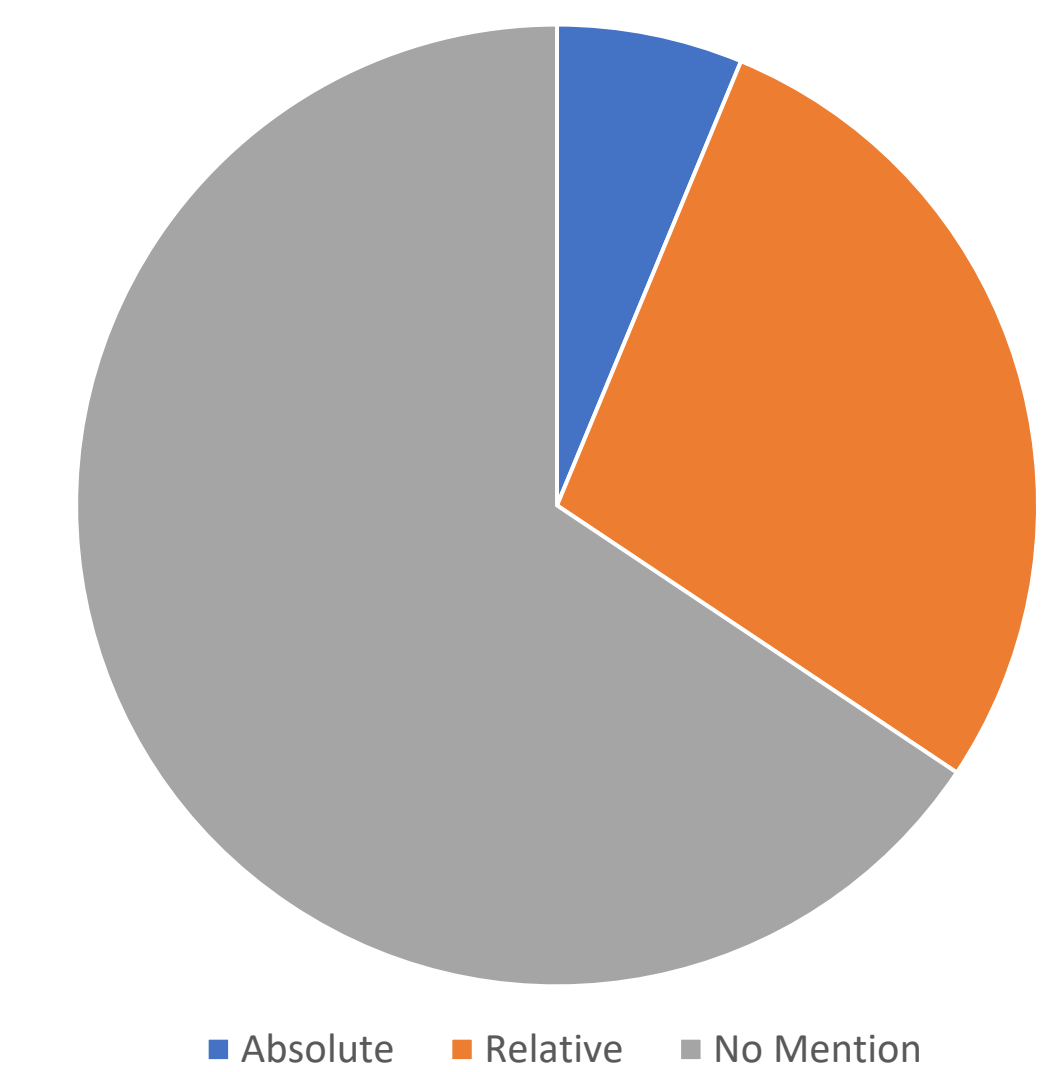


Figure 2

Discussion

The PAW classification system categorizes PRP based on platelet concentration, activation method, and leukocyte content, while the Mishra system classifies PRP by leukocyte content, platelet concentration, and activation status. Conclusions that platelet-rich plasma (PRP) lacks efficacy are limited by substantial heterogeneity in preparation methods across studies, as demonstrated in the 2021 Cochrane review. Of the 32 studies included, only 4 clearly identified the PRP preparation utilized, making comparisons and pooled conclusions difficult (Figure 1). PRP formulations varied in leukocyte content, classification system, and platelet concentration, all of which may influence clinical outcomes (Figures 1 & 2). Because studies fail to use standardized preparation and classification systems, they likely represent different interventions. Therefore, conclusions regarding PRP ineffectiveness—particularly for pain reduction—should be interpreted cautiously until consistent preparation and dosing protocols are established.

The Cochrane review findings are also challenged by Mishra et al. (2006, 2014) and Gosens et al. (2011), which demonstrated significant long-term pain improvement with PRP compared with corticosteroid injections. Overall, however, the 2021 Cochrane review did not determine PRP injections for lateral epicondylitis to be efficacious, emphasizing the need for further standardized research.

Limitations

- The pre-selected study list may have excluded newer studies or journals not indexed in the original meta-analysis.
- This study focused only on lateral epicondylitis, limiting generalizability to other PRP applications.

Future Studies

- Development of standardized PRP classification and preparation systems with randomized controlled trials
- Comparison of efficacy and usability among PRP preparation kits
- Inclusion of multiple meta-analyses and sports medicine populations
- Determination of the optimal platelet concentration for lateral epicondylitis treatment

Abstract & References



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