

## PRP for Knee Osteoarthritis: The Evidence

Multiple organizations, including the American Medical Society for Sports Medicine and the American Academy of Orthopaedic Surgeons provide a recommendation that platelet-rich plasma (PRP) may reduce pain and improve function in patients with symptomatic knee osteoarthritis. [1]

Recent meta-analyses demonstrate that PRP provides clinically meaningful improvements in pain and function compared to placebo, with benefits influenced by platelet concentration and disease severity. A 2025 meta-analysis of 18 randomized controlled trials (1,995 patients) found that PRP exceeded the minimal clinically important difference (MCID) for pain relief at 3 and 6 months and for functional improvement (WOMAC scores) at all follow-up points through 12 months. [2]

In addition, comparative effectiveness studies favor PRP over hyaluronic acid for long-term outcomes. Multiple systematic reviews found PRP superior to hyaluronic acid at 6 and 12 months for pain reduction and functional improvement, with one meta-analysis showing advantages in WOMAC-Pain, WOMAC-Stiffness, and WOMAC-Physical Function beyond 24 weeks. [3-4] The American Society of Pain and Neuroscience guidelines note PRP's excellent safety profile, with adverse events comparable to other conservative treatments. [3]

Not all PRP is equally efficacious. In the above 2025 meta-analysis, high-platelet PRP (>1,000,000 platelets/ $\mu$ L) provided superior and more durable benefits than low-platelet formulations, with clinically significant pain relief maintained through 12 months versus loss of benefit in the low-platelet group. [2]

Leukocyte-poor PRP formulations appear more effective than leukocyte-rich preparations for pain relief, likely due to reduced inflammatory mediators. [5-6] A large multicenter trial (610 patients) using pure PRP demonstrated sustained improvements in WOMAC and IKDC scores through 60 months, with reduced synovial fluid inflammatory markers (TNF- $\alpha$ , IL-1 $\beta$ ) and slower cartilage volume loss compared to saline. [7]

One thing to note is that disease severity appears to significantly influence outcomes. Studies in severe osteoarthritis (KL stage IV) show mixed benefit, while those in KL stages I-III demonstrated more favorable results. [1] When comparing PRP to corticosteroid injections, three injections given one month apart showed improvement at 3 and 6 months in KL II-III disease, whereas end-stage KL IV disease showed no difference. [1]

## References

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