

Researchers Explore Exercise-Based Method to Improve Platelet-Rich Plasma Treatments

A team of researchers from Venezuela, supported by a grant from the International Society of Arthroscopy, Knee Surgery and Orthopaedic Sports Medicine and the Orthopaedic Research and Education Foundation, has completed a pioneering clinical trial testing how exercise with blood flow restriction (BFR) can change the composition of platelet-rich plasma (PRP).

What was studied?

PRP is a blood product widely used in sports medicine and orthopaedics to help injuries heal. It is made from a person's own blood and is thought to work because it contains healing factors. However, PRP is not always the same—its composition can vary depending on how it is prepared and the individual's biology. The research team wanted to see if a special type of exercise—low-load knee extensions performed with blood flow restriction (using a cuff that gently limits circulation during exercise)—could change the quality of PRP before it is prepared for treatment.

How was it tested?

Twenty-four healthy young men were randomly assigned to perform either:

Knee exercises with blood flow restriction (BFR), or

The same exercises without BFR.

Blood samples were collected before and after the exercises, and PRP was prepared and analysed. The team measured platelet counts, immune cell levels, and key proteins involved in healing, such as insulin-like growth factor 1 (IGF-1) and interleukin-6 (IL-6).

What did they find?

PRP prepared after exercise with BFR showed a significant reduction in IL-6, an inflammatory marker.

Platelet levels in PRP increased slightly after BFR exercise, while immune cell levels decreased.

IGF-1, a protein linked to muscle and bone healing, showed a small increase after BFR exercise.

Why is this important?

These results suggest that exercise immediately before blood collection—especially with blood flow restriction—may alter PRP in ways that could make it more useful for specific injuries. For example, lowering IL-6 might help in conditions where too much inflammation is harmful.

Next steps

This was a pilot study, meaning it was small and designed to test the idea for the first time. The authors note that more research is needed to confirm the effects in larger groups, in women, and in patients with injuries. Still, the findings point toward a simple, non-invasive way to “personalise” PRP treatments through exercise.

Quote from the lead investigator, Dr. Theodorakys Marín Fermín:

"Our results show that a short exercise session with blood flow restriction can change what we get in platelet-rich plasma. This opens the door to more tailored treatments for sports injuries and joint problems."