

Platelet Rich Plasma (PRP) Therapy for Tendon Injury, Plantar Fasciitis, and Osteoarthritis

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Platelet-rich plasma (PRP) therapy is a newly developed therapy to treat sports injuries, soft tissue injuries, and much more. In addition, since it is a relatively new kind of therapy, researchers are exploring its role in treating other musculoskeletal conditions.

In PRP, doctors take the patient's blood and then use specific devices to create platelet-rich plasma (PRP). Thus, they can make a product with a much higher concentration of platelets and biologically active compounds.

Since the product is made from the patient's own blood, it is a highly safe therapy. It is especially good for soft tissue injuries and various sports injuries, as it boosts healing processes⁽¹⁾.

Here it is vital to understand that although PRP therapy is new, but not the concept. The so-called autologous blood transfusion has been used in medicine for a long. It has some distinct benefits over allogeneic blood transfusion (using the donor's blood), like improved safety profile, lack of allergic reactions, and much more⁽²⁾.

Early studies have also shown that local injection of autologous whole blood may even help boost regenerative processes⁽³⁾. However, using whole blood is inferior to PRP. This is because red blood cells and other cells are not needed to boost local healing processes and are more likely

to cause local inflammation. Thus, using a patient's blood to create PRP helps produce a more potent and safer product.

Generally, just a few milliliters of PRP is enough to boost local healing processes, and thus doctors would extract only a tiny amount of a patient's blood to produce PRP. Then, once they have created PRP, they just inject it at the place of injury.

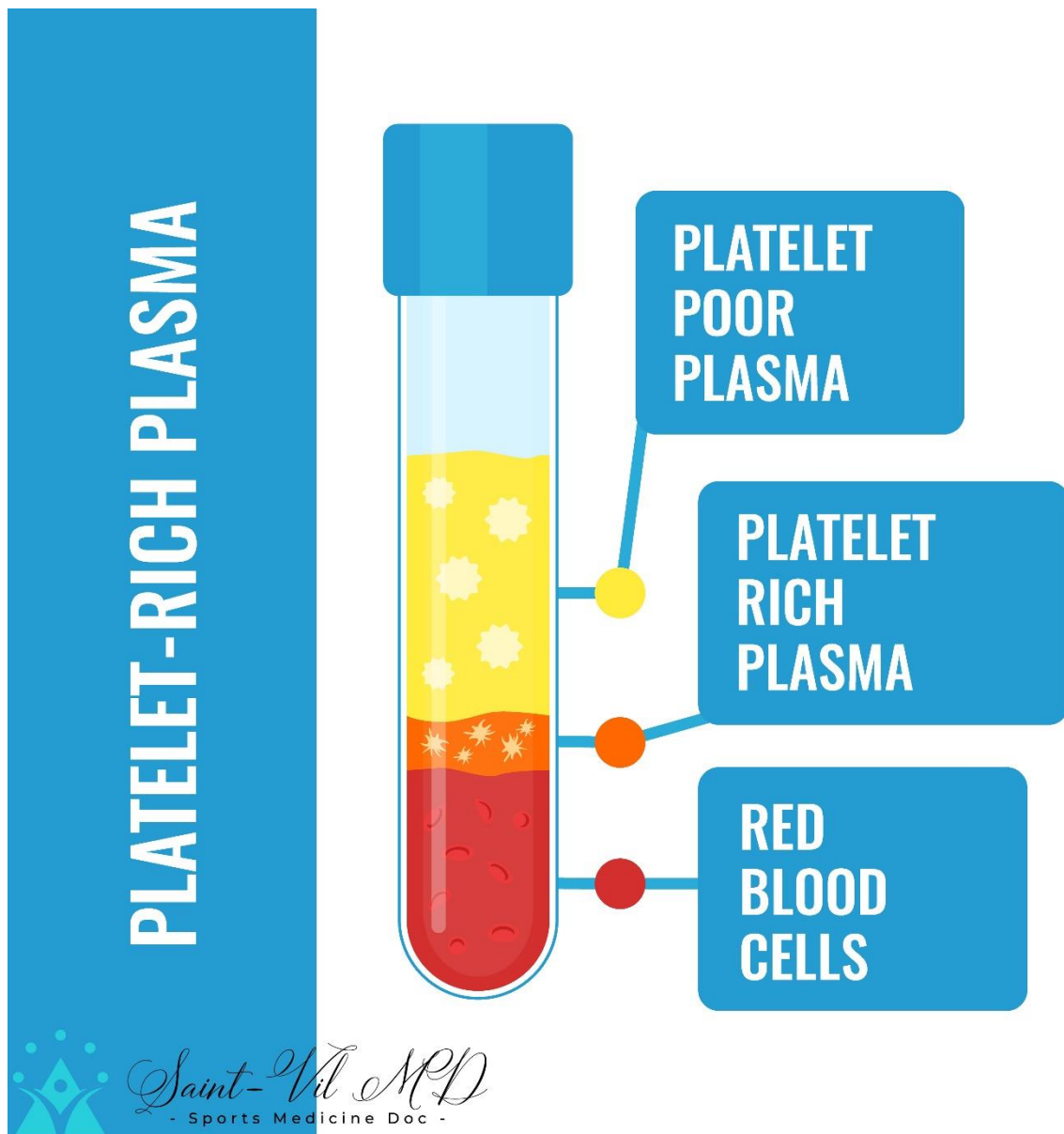
How does PRP work?

PRP contains blood plasma or its liquid part with high amounts of platelets. Platelets play an essential role in blood clotting and initiating various healing processes after injury. In addition, it is a natural way in which the body heals. Thus, injecting PRP is more about providing some extra help to the body's healing processes.

However, studies show that PRP works mainly due to its high content of various growth factors with wide-ranging physiological effects. Below are some of the growth factors found in PRP⁽⁴⁾.

- **PDGF (Platelet-Derived Growth Factor)** –plays a vital role in angiogenesis (formation of microcirculation or small blood vessels), activating macrophages, attracting fibroblasts, increasing proliferative activity, boosting collagen synthesis, and even increasing proliferation of bone cells.
- **IGF-1 (Insulin-like Growth Factor-I)** - stimulates local protein production and cell differentiation and boosts skeletal muscle repair.
- **TGF- β (Transforming Growth Factor- β)** –is especially good at stimulating the production of collagen type 1, inhibiting bone reabsorption, and regulating the activity of myocytes.
- **PDEGF (Platelet-Derived Endothelial Growth Factor)** – Promotes bone healing and cartilage growth.
- **PDAF (Platelet-Derived Angiogenic Factor)** – Induces vascularization and improves vascular function.
- **EGF (Endothelial Growth Factor)** – Increases local cell production and differentiation of epithelial cells.
- **VEGF (Vascular Endothelial Growth Factor)** – Boosts the growth of endothelial cells, formation of new blood vessels, vasodilation, and other regenerative processes.
- **HGF (Hepatocyte Growth Factor)** – Stimulates growth of liver cells, tissue regeneration, formation of new blood vessels, and much more.

As one can see, PRP works by providing multiple growth factors to the injury site, and it can considerably boost local healing processes in trauma and musculoskeletal conditions.



PRP for tendon injury

Doctors traditionally managed tendon injury with RICE therapy (Rest, Ice, Compression, Elevation), the use of anti-inflammatory drugs, and physiotherapy. In some cases, surgical correction may help.

However, PRP provides a novel way to boost local regenerative processes. Unlike other methods that only lower inflammation but do not actively enhance local healing processes. Doctors would inject the PRP at the site of trauma, and studies show that it can considerably improve healing without any significant side effects.

Although this is a relatively new treatment strategy, data is emerging that it helps. A systemic review of clinical studies confirms its efficacy in managing ligament and tendon injury⁽⁵⁾.

PRP for plantar fasciitis

It is a chronic condition of the feet. Anyone who is living with the disease knows how debilitating the condition is. Since it occurs due to stress on the plantar fascia, managing it is challenging as walking causes worsening of local inflammation. Pain killers help in the condition,

but they often fail to cure, and hence a person has to live with the pain for months and even years.

Thus, recovery in the condition can be fastened by injected medications or PRP locally in the feet. Interestingly enough, one of the clinical trials found that PRP is better than corticosteroids and a much safer option for the conditions. However, plantar fasciitis may require more than one injection at the site⁽⁶⁾.

PRP appears to have quite a good efficacy in the condition. In yet another clinical trial, researchers found that it could help in 88% of the cases. Here it is worth understanding that 72% of the participants had severe and debilitating pain before the procedure⁽⁷⁾.

PRP for osteoarthritis



Osteoarthritis mainly causes joint pain in weight-bearing joints. It is the leading cause of knee arthritis. Unfortunately, the condition cannot be cured and is progressive. However, medical therapy may arrest its progress and help reduce pain. Nevertheless, after a few years, medications may start failing to provide relief to some people. Therefore, doctors may try minimally invasive therapies like intraarticular hyaluronic acid, corticosteroids, and even PRP in such individuals.

PRP is a relatively new therapy for the condition and is still not in widespread use. However, it is among the safest options. Moreover, unlike other options, it is the only therapy that may even promote cartilage growth and tissue regeneration. Thus, it is among the most promising therapeutic approaches⁽⁸⁾.

Although there is still limited data, studies show that it can provide both short-term and long-term relief in osteoarthritis, and this benefit is supported by many clinical studies⁽⁹⁾.

Moreover, one of the comparative clinical studies shows that PRP is even better than intra-articular hyaluronic acid injection in the long run. This benefit is shown in a study in 160 patients with a follow-up period of 12-months⁽¹⁰⁾.

Final thoughts

There is no doubt that PRP is one of the most effective treatments for promoting the healing of sports injuries and even arthritis. However, unlike other intra-articular injections, it is less extensively tested and is relatively new. Thus, only treating doctors can decide the duration of therapy, the timing of injection, single application, or multiple applications to use, and other factors⁽¹¹⁾.

Additionally, it is worth understanding that the quality of treatment also depends on the devices used to create PRP. It is because different devices make different levels of platelet concentration. Additionally, some may remove leucocytes, while others not⁽⁴⁾.

Finally, it is also worth understanding that, unlike corticosteroids or hyaluronic acid, PRP may cause inflammation post-injection. Thus, there would be an increase in pain for a week or more. However, once the acute inflammation is over, it would result in much better healing and pain reduction.

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