



Platelet-Rich Plasma (PRP) for Muscle Injuries

Hamstring Injuries in Athletes (Hamid, AJSM 2014)

A randomized controlled trial of 28 athletes with acute Grade 2A hamstring injuries (<33% muscle fiber disruption) showed that a single injection of leukocyte-rich PRP combined with rehabilitation resulted in significantly faster recovery compared to rehabilitation alone. The PRP group returned to play in an average of 26.7 ± 7 days, versus 42.5 ± 20.6 days in the control group. Pain intensity was lower in the PRP group.

Hamstring Injuries in NFL Players (Bradley, OJSM 2020)

This study evaluated 69 NFL players with Grade 2 hamstring injuries. Those treated with platelet-poor plasma (PPP) missed fewer games (1.3 vs. 2.9) and had slightly fewer days missed (22.5 vs. 25.7), although the day difference was not statistically significant. PRP enabled quicker return-to-play, providing a practical advantage for professional athletes.

Muscle Cell Differentiation and PRP Type (Dragoo, AJSM 2016)

In vitro research demonstrated that platelet-poor plasma (PPP) and neutrophil-depleted PRP promoted superior myoblast differentiation compared to standard PRP, which instead favored myoblast proliferation. Muscle regeneration was supported by increased myosin heavy chain expression with PPP, indicating a potential mechanistic basis for improved healing with certain PRP formulations.

Clinical Summary

Superdose PRP and its variants, including leukocyte-poor and platelet-poor plasma, may improve muscle healing outcomes by accelerating recovery and enhancing muscle cell differentiation. These therapies have shown value in reducing pain and shortening return-to-play timelines in acute muscle strains, particularly hamstring injuries. Ongoing research continues to refine the optimal formulation for skeletal muscle repair.

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