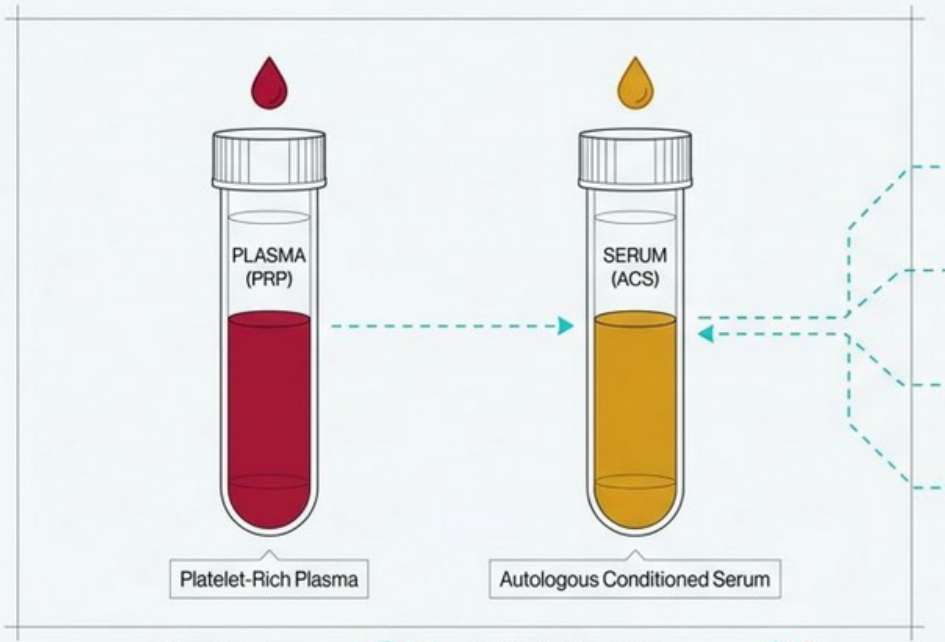
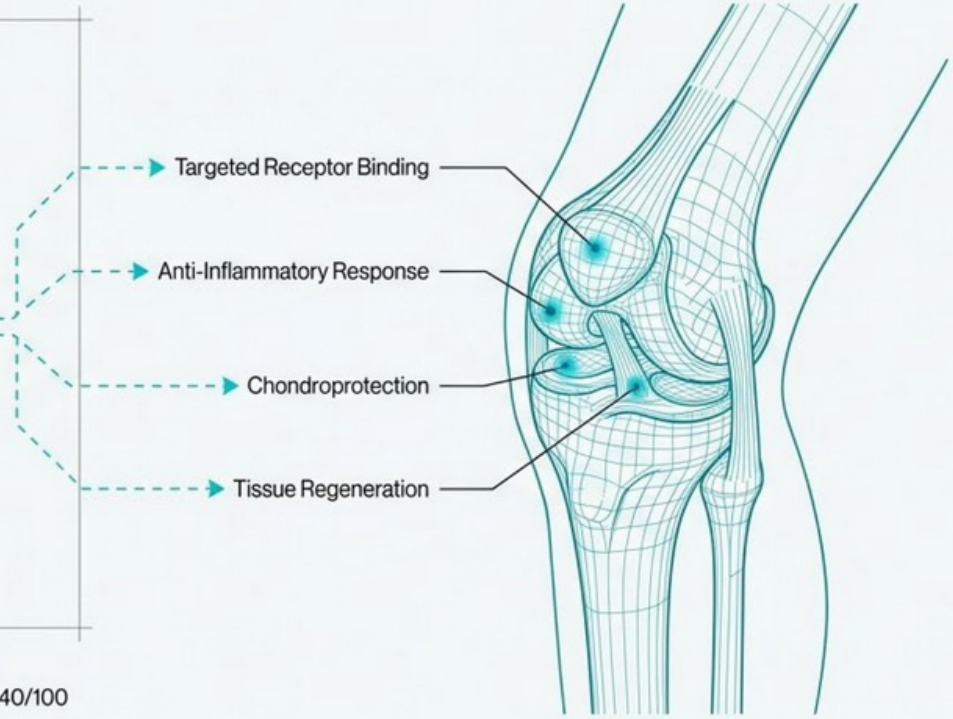
Beyond Plasma

The Clinical and Biological Superiority of Autologous Conditioned Serum (ACS) in Joint Therapy





CURRENT INTRA-ARTICULAR THERAPIES FAIL TO ALTER THE BIOLOGICAL PROGRESSION OF OSTEOARTHRITIS

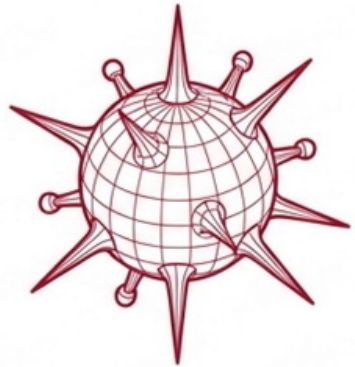
CORTICOSTEROIDS

Temporary symptom masking; potential for accelerated cartilage degradation over time

HYALURONIC ACID (HA)

Purely mechanical lubrication; lacks active biological healing or regenerative signaling

PLATELET-RICH PLASMA (PRP)



Unpredictable slow-release mechanism; requires anticoagulants; retains thrombosis-risk coagulation factors

A proven therapy originally engineered for high-stakes equine sports medicine.

1990s: The Orthokine Origin

Developed by researchers in Germany as an autologous joint therapy, preceding the widespread adoption of PRP.

Veterinary Proving Ground

Deployed to treat severe lameness in elite horses—an environment demanding rapid, undeniable biomechanical recovery.

2001: GMP Certification

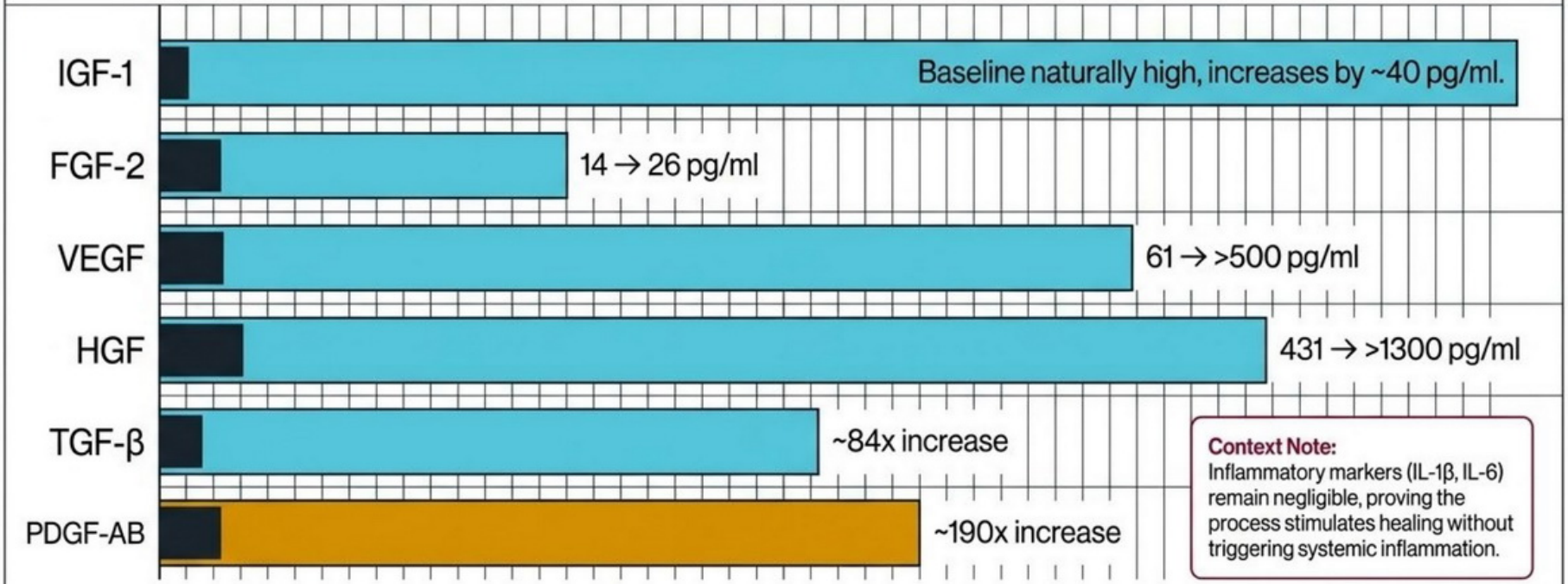
Official Good Manufacturing Practice (GMP) certification for human production and clinical application.

Key Takeaway: The transition from treating equine joint degradation to human osteoarthritis established a foundational safety and efficacy profile unmatched by standard orthobiologics.

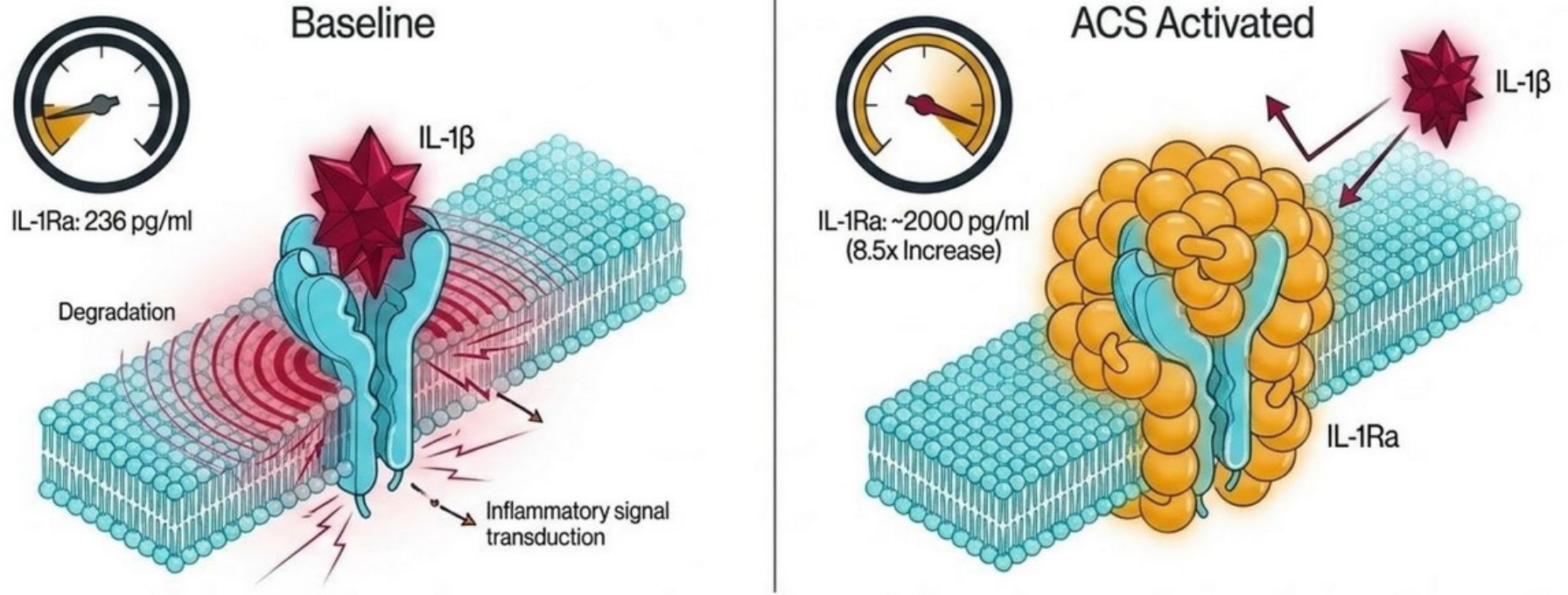
The Biochemical Factory: Engineering Autologous Conditioned Serum.

Extraction	The Catalyst	Incubation	Centrifugation	The Output
				
Whole blood is drawn (No anticoagulants).	Blood is introduced to specific sulfate-coated beads.	6 to 9 Hours. The beads mimic a severe inflammatory environment, forcing monocytes and platelets to mass-produce healing proteins.	4000-5000 RPM. Blood is spun to separate the enriched serum.	ACS, ready for injection.

Incubation triggers a massive multiplication of critical growth factors.

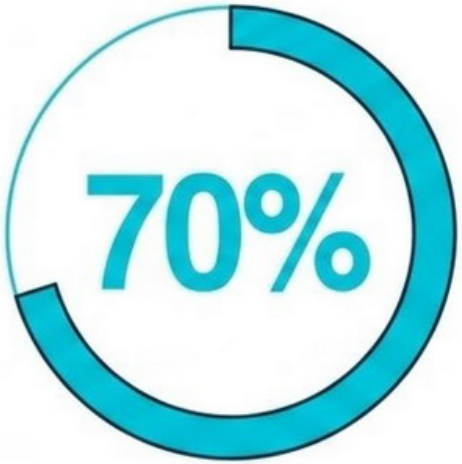


The physical blockade of joint inflammation via IL-1Ra.



1,000-Patient Retrospective: Sustained biomechanical recovery.

Immediate Efficacy



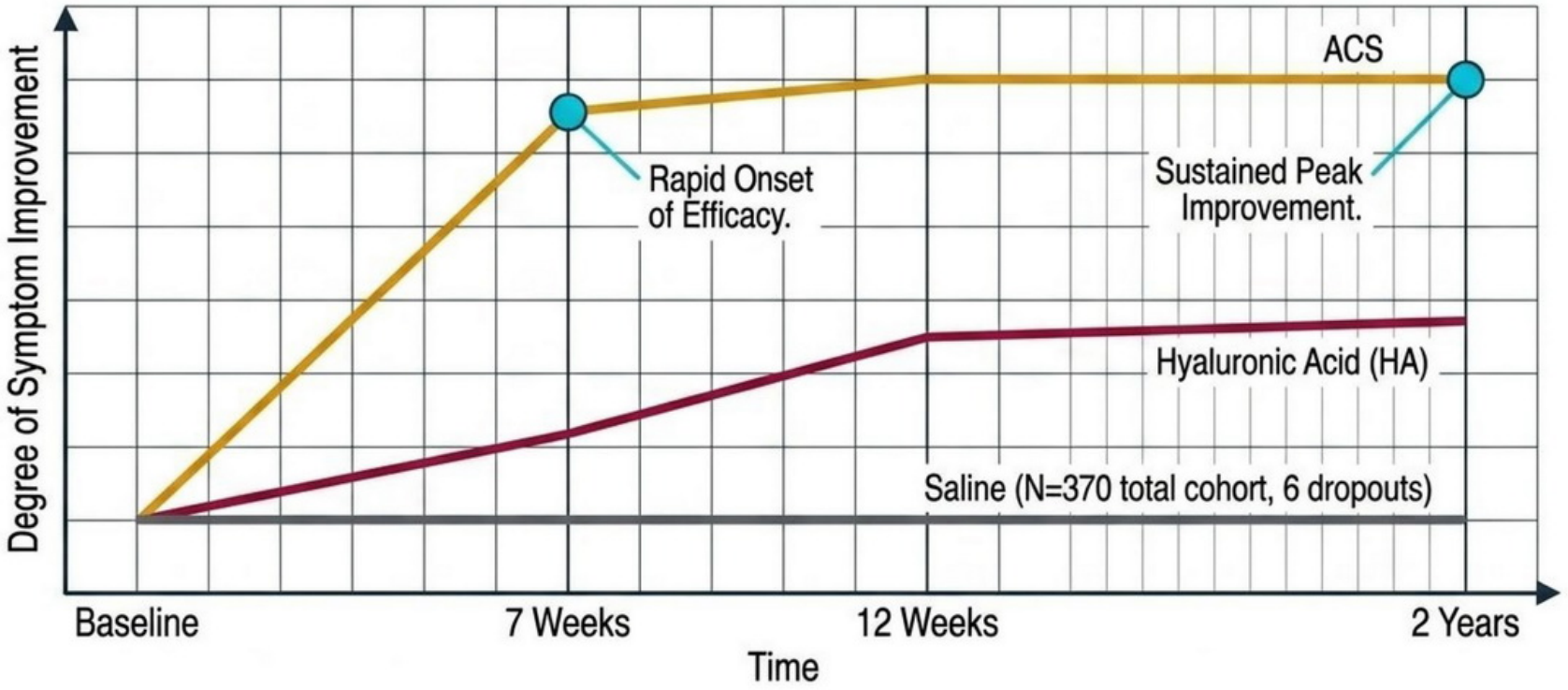
70% of patients achieved greater than 50% improvement in WOMAC scores (measuring pain, stiffness, and physical function).

Longevity

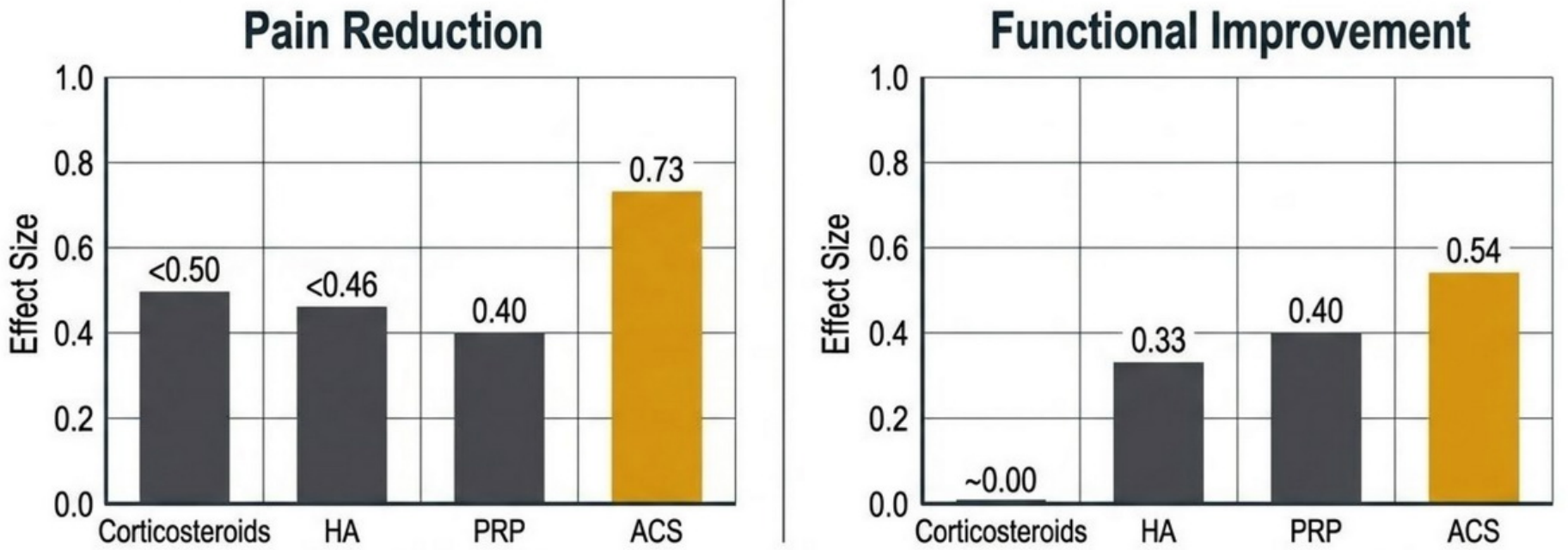
3.5 Years

35% of the patient cohort maintained their total pain reduction and functional improvement for approximately 3.5 years following the ACS protocol.

Randomized Controlled Trial confirms superiority over Hyaluronic Acid and Saline.



ACS delivers the highest clinical effect size for both pain and joint function.



Takeaway: ACS mathematically outperforms both traditional pharmaceuticals and standard orthobiologics.

Why does ACS dramatically outperform Platelet-Rich Plasma?

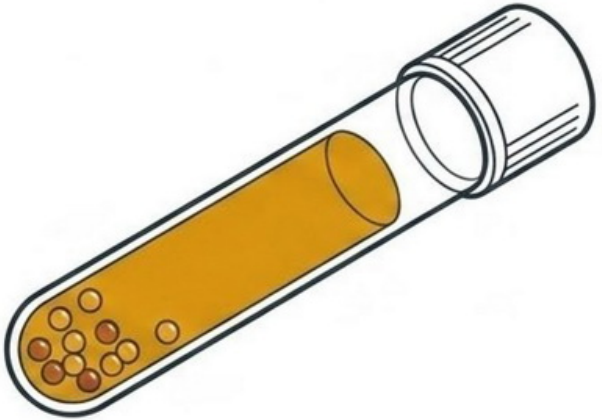
PLASMA (PRP)

Fast to produce (10 mins),

but biologically constrained by anticoagulants and intact, unbroken platelets.

The answer lies in the fundamental biological distinction between Plasma and Serum.

SERUM (ACS)



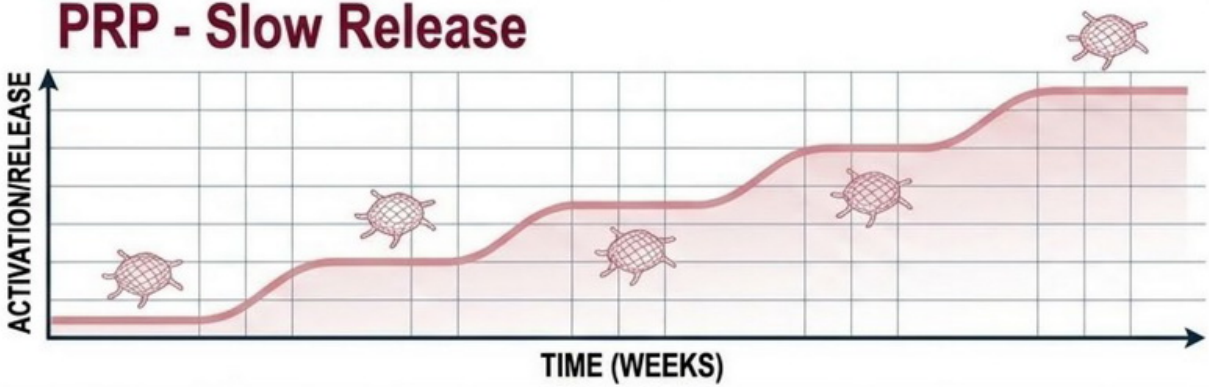
Complex to produce (6-9 hours), but yields a fully activated, cell-free biological payload.

The Serum vs. Plasma Diagnostic Matrix

Category	Standard PRP (Plasma)	ACS (Serum)
Anticoagulants	**PRP Cell:** Required (prevents clotting, dilutes sample).	**ACS Cell:** Zero (100% autologous).
Coagulation Factors	**PRP Cell:** Retained (introduces thrombosis/embolism risks in vivo).	**ACS Cell:** Consumed (factors are permanently exhausted during the in-vitro clotting process).
Growth Factor Status	**PRP Cell:** Trapped inside intact platelets.	**ACS Cell:** Fully released into the serum during incubation.
In-Vivo Activation	Unpredictable, delayed release.	**ACS Cell:** Immediate, full-dose biochemical payload.

The myth of ‘slow release’ in biological healing.

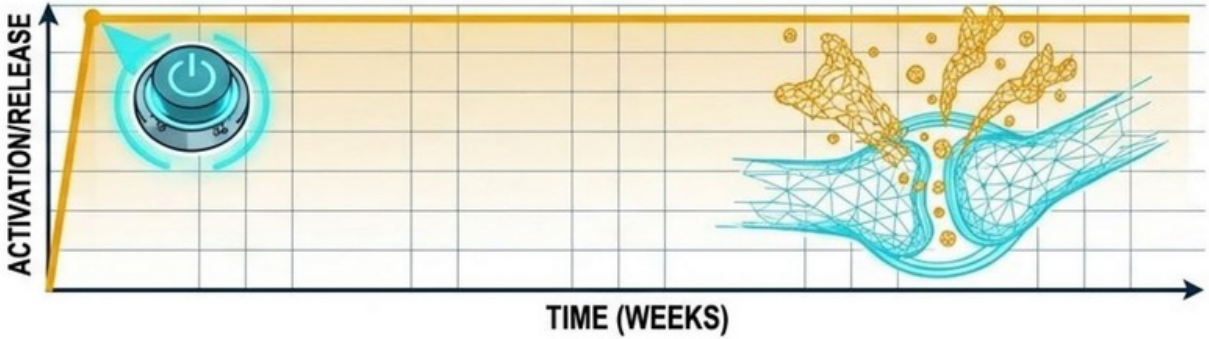
PRP - Slow Release



Traditional logic assumes platelets should slowly trickle out healing factors over weeks.

Physiology does not heal this way.

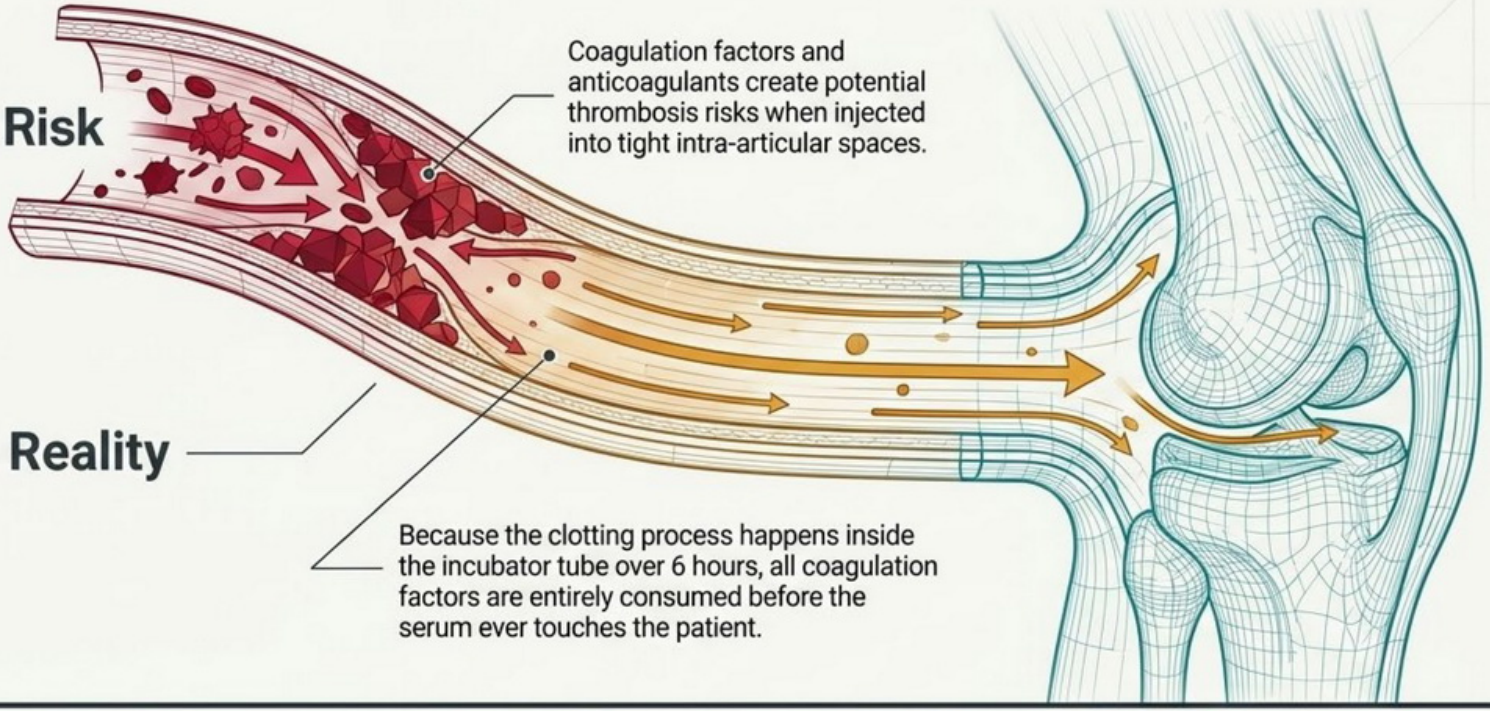
ACS - Full-Dose Activation



Genuine physiological tissue repair requires an immediate, total biological cascade to force the joint out of a degenerative state.

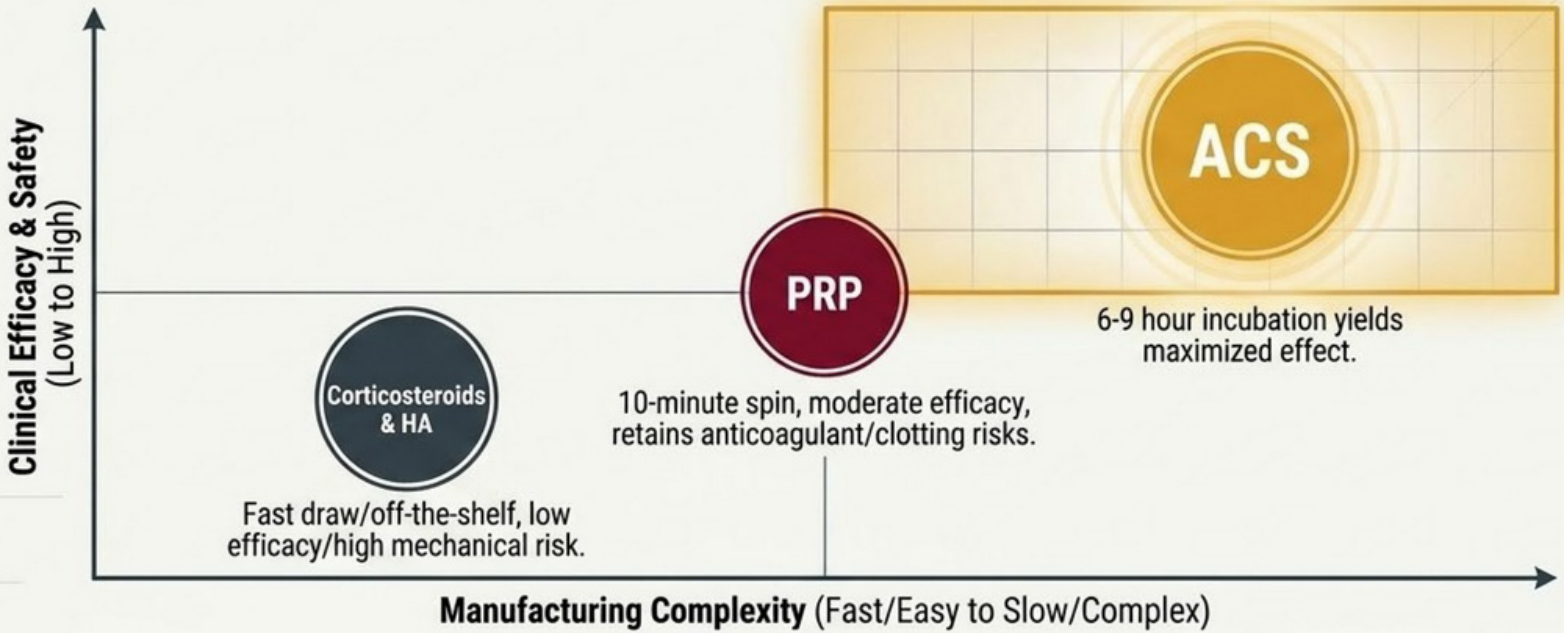
ACS delivers all growth factors upfront.

Serum yields an unmatched clinical safety profile.



Result: Zero thrombosis risk. Zero Serious Adverse Events (SAEs) reported.

The Efficacy vs. Effort Matrix



Takeaway: The burden of the manufacturing process is the exact engine of its superiority. By accepting a 6-hour incubation, clinicians deliver an entirely risk-free, biologically maximized serum.

The future of orthobiologics is Serum, not Plasma.

Biological Dominance

190x increase in PDGF-AB and 8.5x increase in IL-1Ra antagonist.

Clinical Proof

0.73 effect size in pain reduction, vastly outperforming PRP and HA, with sustained relief up to 3.5 years.

Ultimate Safety

Zero anticoagulants. Zero coagulation factors. Full-dose, immediate healing activation.

Autologous Conditioned Serum (ACS) requires a rigorous biological process to achieve what simple centrifugation cannot: true physiological transformation of the joint environment.