

The Synergistic Use of MLS® Laser Therapy and Orthobiologics

A multimodal regenerative strategy — supported by 24 months of real-world outcomes from the DataBiologics IMPACT™ Registry

Overview of the Technologies

MLS® Laser Therapy (Multiwave Locked System)

MLS laser therapy is an advanced form of photobiomodulation that uses synchronized continuous and pulsed wavelengths of light (808 nm and 905 nm). This dual-wavelength approach is designed to simultaneously address inflammation and pain while promoting cellular repair. At the tissue level, MLS laser therapy enhances mitochondrial activity (increasing ATP production), modulates inflammatory mediators, improves microcirculation, and accelerates tissue healing.

Orthobiologics

Orthobiologics are biologically derived substances used to enhance the body's natural healing processes. Common examples include platelet-rich plasma (PRP), bone marrow aspirate concentrate (BMAC), and other cell-based or growth-factor-rich preparations. These therapies deliver concentrated growth factors, cytokines, and/or progenitor cells directly to injured tissue, stimulating regeneration, angiogenesis, and matrix remodeling.

7,638+

Combination & comparator
cases in registry

92%

Patients satisfied
long-term

24 mo.

Longitudinal
follow-up window

Mechanistic Basis for Synergy

The combination of MLS laser therapy and orthobiologics is synergistic because the two modalities act on complementary aspects of the healing cascade.

1. Cellular Priming and Metabolic Activation

MLS laser therapy enhances mitochondrial function and increases ATP production in local cells. This “primes” the tissue environment, making resident cells (fibroblasts, tenocytes, chondrocytes) more metabolically active and responsive. When orthobiologics are subsequently introduced, the cellular environment may be better equipped to respond to the delivered growth factors.

2. Improved Microenvironment for Biologic Activity

Laser therapy increases local blood flow and lymphatic drainage, reducing edema and improving oxygenation. This creates a more favorable biochemical environment for orthobiologic agents to function, supporting the nutrient delivery and waste removal that are critical for repair.

3. Modulation of Inflammation

Both therapies influence inflammation through different mechanisms. MLS laser downregulates pro-inflammatory cytokines and reduces pain signaling, while orthobiologics help shift the inflammatory phase toward regeneration via growth factors and signaling molecules. Together, they help optimize the transition from inflammation to proliferation.

4. Enhanced Cellular Signaling and Growth-Factor Utilization

Orthobiologics deliver key growth factors (e.g., PDGF, TGF- β , VEGF), while MLS laser therapy enhances cellular receptor sensitivity and intracellular signaling pathways. This may improve the uptake and utilization of these biologic signals, amplifying their regenerative effects.

5. Pain Reduction Supporting Functional Recovery

MLS laser therapy provides early analgesia, which can improve patient tolerance to treatment and facilitate earlier return to movement. This functional improvement may further enhance the regenerative benefits of orthobiologics through controlled loading and rehabilitation.

Clinical Perspective

The integration of MLS laser therapy with orthobiologics represents a multimodal regenerative strategy: orthobiologics provide the biologic building blocks and signaling molecules, while MLS laser therapy optimizes the cellular environment and responsiveness. When used together in a structured protocol, they may produce more consistent and accelerated healing outcomes than either modality alone — particularly in chronic tendinopathies, ligament injuries, and degenerative joint conditions.

A Typical Combined Treatment Protocol

A staged approach is commonly used to maximize synergy.

Phase	Timing	Primary Goals
Pre-Injection (2–4 visits)	MLS laser applied prior to the orthobiologic injection	Reduce baseline inflammation and pain; improve tissue perfusion; prime cellular metabolism and responsiveness
Day of Injection	Orthobiologic injection (e.g., PRP or BMAC), with MLS laser applied immediately after	Enhance early biologic activity; support inflammatory-to-regenerative signaling; improve circulation without disrupting injected material
Post-Injection (6–8 sessions)	MLS laser continued over several weeks following the procedure	Sustain anti-inflammatory effects; promote ongoing cellular repair and collagen synthesis; enhance remodeling and functional recovery

Treatment frequency is typically 2–3 sessions per week initially, tapering based on clinical response.

Treatment Parameters

As with all forms of treatment, specific laser settings are the decision of the treating provider and depend on the individual patient and condition. The following are recommendations shared by providers who have successfully implemented these combination treatments:

Provider-Shared Setting Recommendations	
Pre-Injection Phase	Pre-programmed setting — Local Blood Circulation
Day of Injection & Week After	Low frequency (700 Hz) Intensity 50% Energy density 4 J/cm ²
Subsequent Visits	Pre-programmed setting — based on condition

What Providers Are Saying

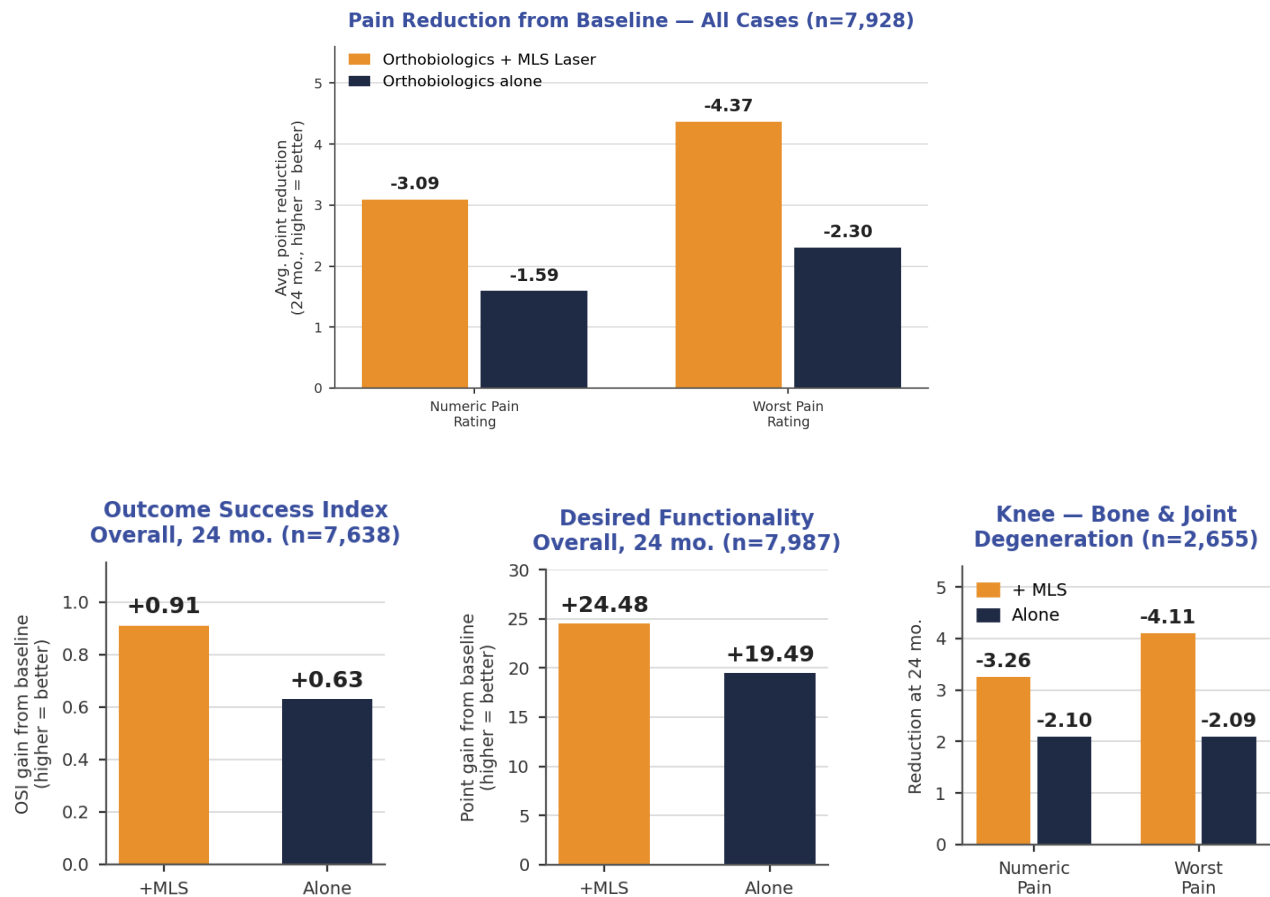
“Patients that opt to not get laser do not see as quick of improvement.”

“Patients are extremely happy and returning to activity faster.”

“We’ve seen a noticeable improvement in pain reduction, post-procedure swelling, and quicker recovery once starting combination protocols.”

Real-World Outcomes: DataBiologics IMPACT™ Registry

The following findings draw on the DataBiologics IMPACT Registry as of 9/2/2026 — a broad cross-section of patients and practice types across the U.S. and Canada (avg. age 63, avg. BMI 27). Across more than 7,600 cases spanning knee, shoulder, hip, spine, upper-extremity, and foot/ankle presentations, orthobiologics combined with MLS laser therapy consistently outperformed orthobiologics alone on patient-reported pain and outcome measures.



Key Findings

- **Greater pain relief.** Overall numeric pain rating with MLS laser fell from a baseline of **4.69** to **1.60** at 24 months (a -3.09 change), versus **5.26** to **3.67** (-1.59) for orthobiologics alone. Worst-pain rating fell from **6.58** to **2.21** (-4.37) with MLS laser versus **7.30** to **5.00** (-2.30) alone (lower is better).
- **Better Overall Outcomes.** The Outcome Success Index rose from a baseline of **3.66** to **4.57** at 24 months with MLS laser (+0.91) versus **3.62** to **4.25** (+0.63) without — with the combination ahead of biologics-alone at every follow-up interval. Desired functionality climbed from **50.18** to **74.66** (+24.48) with MLS laser versus **52.62** to **72.11** (+19.49) alone.
- **Strong signal in knee bone & joint degeneration.** Within this subgroup (n=2,601+, 96% satisfied long-term), combination care reached **-3.26** numeric and **-4.11** worst-pain reduction at 24 months versus **-2.10** and **-2.09** for biologics alone. Desired functionality climbed from **17.29** with biologics-alone to **24.33** (+7.04) combined with MLS laser. Outcome Success Index gain of **+1.05** versus **+0.60**.

• **Durable satisfaction.** 92% of all registry patients — and 96% in the knee subgroup — reported being satisfied long-term.

Disclaimer: This information is based in whole on reports and/or analyses from the DataBiologics IMPACT Registry. DataBiologics is not responsible for and does not necessarily endorse the analysis or conclusions in this information. Registry data is patient-reported and aggregated; it has not been peer-reviewed and is provided for informational purposes only. It is not a substitute for independent clinical judgment, and makes no claim to diagnose, treat, cure, or prevent any condition. Specific treatment settings remain the decision of the treating provider. MLS® and Multiwave Locked System are trademarks associated with Cutting Edge Laser Technologies.