Revolutionizing Recovery: Clinical Applications of MLS® Laser in Podiatric Medicine

Here's a modern approach to reducing complications, restoring function, and enhancing outcomes in foot and ankle care.

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Disclaimer: *The author is a paid consultant for MLS Laser Therapy. The content reflects her independent clinical perspective and experience.*

The Hidden Burden of Chronic Conditions in Private Practice

Chronic conditions are some of the most frustrating and emotionally exhausting challenges encountered in medical practice. For patients, the journey may often involve years of persistent pain, functional limitations, and a revolving door of specialists, medications, and therapies. Most result in little relief. The emotional burden frequently leads to stress, anxiety, and even depression as patients lose confidence in the system, question their quality of life, and struggle to balance daily demands with ongoing pain.

Incorporating MLS Laser Therapy into my practice has meaningfully improved how I approach complex recoveries and chronic pain management.

From the physician's perspective, managing chronic conditions and surgical complications, such as neuropathy, tendinopathies, and post-surgical pain, poses not only a clinical dilemma but also emotional and financial burdens. Private practitioners often spend hours customizing treatment plans, navigating insurance denials, and engaging in lengthy patient education discussions. Despite these measures, a number of patients continue to receive care with minimal progress. This can lead to physician frustration, burnout, and the emotional toll of feeling helpless while watching patients suffer.

Within this complex landscape, MLS (Multiwave Locked System) Laser Therapy has emerged as a powerful, noninvasive tool that supports functional recovery, pain reduction, and patient satisfaction. This helps both patients and providers achieve more predictable outcomes.

What Is MLS Laser Therapy?

MLS Laser Therapy is a form of photobiomodulation that combines dual wavelengths: a continuous wave at 808 nm and a pulsed wave at 905 nm.[9] Together, they stimulate cellular metabolism, ATP production, and tissue oxygenation by modulating nerve conduction through synchronized continuous and pulsed wavelengths.[1]

Each wave has a specific role: the continuous wave targets inflammation and edema by improving microcirculation and lymphatic flow, while the pulsed wave penetrates deeper tissues to modulate pain by affecting nerve conduction (Figure 1).

Revolutionizing My Practice with MLS Therapy

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New Concepts and Studies

"Clinical Innovations" is PM's ongoing series of articles dedicated to introducing new concepts, technologies and studies to the podiatric community. Readers should be aware that Podiatry Management does not specifically endorse any of the technologies, concepts, or products being discussed.

FIGURE 1

MLS vs. Traditional Low-Level Laser Therapy (LLLT)

Feature	MLS Laser Therapy	Traditional Low-Level Laser Therapy
Wavelengths	Dual (808 nm continuous + 905 nm pulsed)	Single (typically 600–850 nm)
Mode	Simultaneous synchronized emission	Single wavelength, continuous or pulsed
Depth of Penetration	Up to 5 cm (deeper tissue)	Typically 1–2 cm
Power Output	Up to 3.3 Watts (Class IV laser)	< 500 mW (Class IIIb)
Treatment Time	Shorter (6–12 min/session)	Longer (20–30 min/session)
Clinical Effects	Anti-inflammatory, analgesic, regenerative	Primarily regenerative
Indications	Broader—including neuropathy, soft tissue injuries, post-op pain, arthritis	Mild musculoskeletal injuries and wound healing

ies and chronic pain management. It has become a reliable tool in helping patients reduce complications, regain function, and return to their daily activities with greater confidence and less disruption. The ability to intervene early, without unnecessary delays, has not only led to better clinical outcomes, but has also contributed to greater patient satisfaction. When patients recover more quickly, move more easily, and feel heard and supported, it creates a more fulfilling experience for everyone involved. Ultimately, better outcomes, fewer setbacks, and happier patients make for a more rewarding practice.

Case 1: Surgical Bunion Repair in a Patient with Osteoporosis

History: A 59-year-old female with a history of osteoporosis presented with a hallux valgus deformity. X-rays confirmed the diagnosis; however, no obvious osteoporosis was seen on preoperative radiographs. An arthrodesis of the first metatarsophalangeal joint was performed. Intraoperatively, cystic changes were noted in the metatarsal bone, along with decreased width at the metatarsophalangeal joint; this precluded the use of standard plate fixation. A two-screw construct supplemented with provisional K-wire fixation was selected as an alternative, given the compromised bone quality and associated risk of delayed healing. Postoperatively, the clinical findings and intraoperative decisions were discussed with the patient, and MLS Laser Therapy was recommended as an adjunct to support bone healing.

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Traditional bone stimulators for nonunion usually cannot be approved until a well-documented nonunion is present, often after three months. This delay can frustrate patients eager to resume work and daily activities. Due to the patient's job requirements, waiting was not an option.

The patient underwent six MLS Laser Therapy sessions, and subsequent radiographs demonstrated complete consolidation at the arthrodesis site (Figures 2, 3, 4). Six weeks after surgery, the patient resumed full work duties, exceeding expected recovery timelines. She expressed strong satisfaction with both the surgical outcome and the proactive approach used to minimize delays and accelerate healing.

Case 2: Post-Surgical Dehiscence in a Patient with Neuropathy

A 72-year-old male with Charcot arthropathy, previously treated with a partial gastrocnemius recession, developed an Achilles tendon rupture. The patient was fitted with a CROW (Charcot Restraint Orthotic Walker) for Charcot management, Achilles tendon rupture, and gait dysfunction. The patient subsequently reported persistent neuropathic pain and lower back discomfort. After demonstrating significant improvement following three tibial nerve hydrodissections, the patient underwent a flexor tendon transfer in conjunction with tarsal tunnel decompression and implantation of a peripheral nerve stimulator.

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Surgical Intervention: Feb. 12, 2025

However, due to chronic denervation and muscle atrophy, the viability of the transfer was uncertain. At one week post -p appointment, the patient developed wound dehiscence and swelling, though without infection. MLS Laser Therapy was initiated, and the incision healed completely after three sessions. The tendon transfer was intact, anatomical alignment was preserved, and swelling was sufficiently reduced to allow expedited casting for an Arizona brace. The patient also reported improved toe flexion strength and sensation to his foot, and recovery progressed efficiently without further complications.

MLS Laser Therapy has become a valuable addition to our treatment options. It is now used regularly for post-surgical recovery, chronic pain, nonunions, and neuropathy.

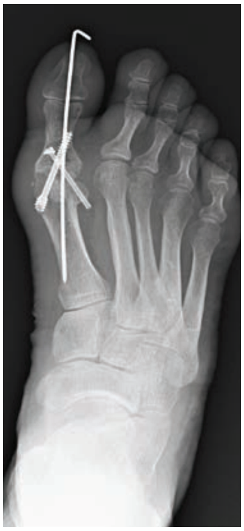
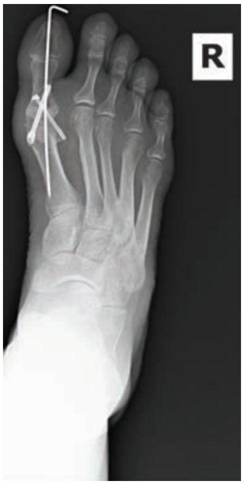



Figure 2. AP, Lateral Radiographs March 10, 2025



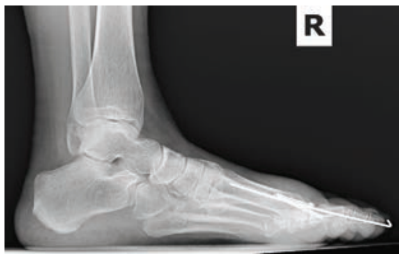


Figure 3. AP, Lateral Radiographs March 27, 2025

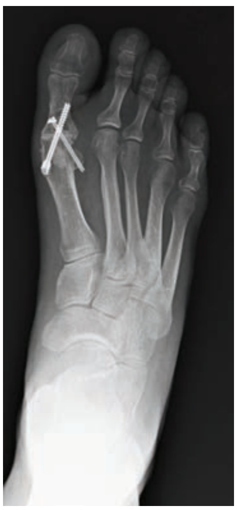


Figure 4. AP, Lateral Final Radiographs May 8, 2025

Integration Into Practice

Integrating MLS Laser Therapy into our practice was straightforward and has become a valuable addition to our treatment options. It is now used regularly for post-surgical recovery, chronic pain, nonunions, and neuropathy. Our team completed training and certification through Cutting Edge Laser Technologies to ensure consistent application. Treatments are non-invasive, typically last 10-12 minutes, and can be performed daily within a 24-hour interval. By educating patients on the role of laser therapy, we have seen greater engagement, trust, and improved outcomes.

Though not covered by insurance, many patients view MLS Laser Therapy as a worthwhile investment, reporting early healing, reduced complications, and increased function. The result is greater satisfaction and a stronger physician-patient relationship.

Conclusion

Our clinical case of osteoporotic arthrodesis consolidation aligns with strong preclinical evidence showing photobiomodulation's role in bone regeneration. A study by Rennó and colleagues[5,6] demonstrated that LLLT enhances osteoblast activity, angiogenesis, and upregulates key osteogenic genes such as BMP4, Runx2, and ALP during bone repair, mechanisms that likely accelerated healing in our clinical case study.

In the context of muscle and nerve recovery, extensive animal and clinical work supports MLS Laser Therapy. A landmark 30-year review by Rochkind et al.[8] showed that 780 nm laser phototherapy preserves denervated muscle, reduces muscle atrophy, and promotes axonal growth and remyelination in peripheral nerve injuries. Additional clinical trials confirmed early structural and functional improvements in injured nerves after low-level laser application.[7]

The emerging modality of laser phototherapy in nerve tissue engineering further underscores its regenerative potential. Studies on nerve cell cultures showed that laser stimulation enhances neurite outgrowth, supporting the cellular basis for MLS Laser Therapy's neuromuscular benefits.[2]

By targeting bone consolidation, muscle integrity, and neural repair simultaneously, MLS Laser Therapy offers a scientifically-supported adjunct for podiatric applications. Its early implementation bypasses delays tied to insurance-covered devices, allowing faster recovery, fewer complications, and increased satisfaction for both patients and clinicians. **PM**

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By targeting bone consolidation, muscle integrity, and neural repair simultaneously, MLS Laser Therapy offers a scientifically-supported adjunct for podiatric applications.

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