

A Webinar-Inspired eBook

# Laser Therapy for Pain Management in the Era of Opioid Abuse

Dr. Steven Yeomans, DC, FACO

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## **Dr. Steven Yeomans**

DC, FACO

Yeomans-Edinger Chiropractic  
Ripon, Wisconsin

Dr. Steven Yeomans comes from a family of chiropractors serving the Ripon community since the 1940s.

After graduating cum laude from the National College of Chiropractic in 1979, Dr. Yeomans served a 5-year chiropractic orthopedic residency and became board certified in 1985. In 1994, his practice received hospital affiliation with the Ripon Medical Center.

In addition to his private practice, Dr. Yeomans is active in research and lectures on post-graduate department faculty for six different colleges of chiropractic. The topics that he lectures include orthopedics, rehabilitation, industrial consulting, and outcomes assessment.

He has also been involved in the publication of multiple textbooks and research articles. His most recent textbook, published by Appleton and Lange in 2020, is titled “The Clinical Application of Outcomes Assessment.”

Throughout his career, Dr. Yeomans has been awarded the Special Service Award in multiple years. He has also been named the Wisconsin Chiropractor of the Year in 1994 and received the Lifetime Achievement Award in 2019.

Dr. Yeomans has been utilizing Class IV MLS® Laser Therapy since 2011 to combat the opioid epidemic by offering relief of pain and inflammation without pharmaceuticals.

# Industry Insights



## The Opioid Crisis

More than 191 million opioid prescriptions were dispensed to Americans in 2017.<sup>1</sup> This has nearly quadrupled since the year 2000.<sup>2</sup>

Unfortunately, the number of opioid overdose deaths had also quadrupled during that time.<sup>2</sup>

According to the Center for Disease Control, as many as 1 in 4 patients receiving long-term opioid therapy for chronic pain within a primary care setting struggles with addiction.<sup>1</sup>

Despite that there is no evidence pointing to any benefits for long-term opioid users—only negatives including opioid use disorder, overdose and death—many practitioners continue to prescribe opioids for chronic pain.

This has led 1.7 million Americans to suffer from substance use disorder to prescription opioids and 47,000 opioid overdose deaths in the year 2017.<sup>2</sup>

## Recommended Reading

### A Novel Treatment for Chronic Opioid Use After Surgery

*White PF, Elvir-Lazo OL, Hernandez H. (2017)*

This case report describes how laser therapy can be used to treat patients who have become addicted to prescription opioids after a major surgery.

[Read Now in the Journal of Clinical Anesthesia](#)

## The Opioid Crisis and COVID-19

As we continue to learn about the COVID-19 virus, we continue to recognize more at-risk communities, including people using opioids.

Patients with high-dose opioid prescriptions as well as individuals suffering from opioid use disorder are at an increased risk to COVID-19 due to the drug's adverse effects on the respiratory system.<sup>4</sup>

For the same reason, these individuals are likely to experience more severe symptoms.<sup>4</sup>

We are also seeing a national relapse in drug abuse as shelter-in-place orders have pushed those battling addiction into isolation.<sup>5</sup>

With decreased access to addiction care, fewer opportunities for distraction, and the possible negative affects on mental health associated with the pandemic, an extra layer of complexity is adding on to the struggle to stay sober.<sup>5</sup>

1. Center for Disease Control and Prevention. "[Prescription Opioids](#)." Published August 29, 2017.
2. White, Paul F et al. "[A Novel Treatment for Chronic Opioid use After Surgery](#)." *Journal of Clinical Anesthesia* vol. 40 (2017): 51-53
3. National Institute on Drug Abuse. "[Opioid Overdose Crisis](#)." Published May 27, 2017.
4. Volkow, N. "[COVID-19: Potential Implications for Individuals with Substance Use Disorder](#)." *National Institute on Drug Abuse*. Published April 6, 2020.
5. Silva, M.J. and Kelly, Z. "[The Escalation of the Opioid Epidemic Due to COVID-19 and Resulting Lessons About Treatment Alternatives](#)." *American Journal of Managed Care*. Published June 1, 2020.

## COVID-19 and the Chiropractic Industry

While many aspects of your patients' lives are being altered or put on hold during the COVID-19 pandemic, their painful conditions are not taking a break.

In fact, their conditions might be exacerbating if they are not seeking medical attention due to shelter-in-place recommendations and/or difficulty finding care.

Chiropractors are crucial in decreasing the burden on hospitals during this pandemic by helping triage and manage cases of acute and chronic pain before they escalate and end up in the emergency room.

In addition to keeping patients out of the emergency room, chiropractors are crucial for minimizing the necessity for opioids, therefore reducing the risk of opioid use disorder and other adverse effects.

## Patient Demands

Patients' concerns regarding opioids and other pharmaceuticals are growing. Along with their aversion to invasive procedures, especially those requiring down time, patients are beginning to seek natural alternatives to managing pain and inflammation.

During the COVID-19 pandemic, patients may be hesitant to compromise social distancing to receive care if their condition is not life threatening.

However, many patients see chiropractors as a safer environment than hospitals at this time, especially if the practice is making a clear effort to keep their patients safe and healthy.

Ultimately, their biggest concern would be to obtain a satisfying outcome for pain management and functional restoration as fast and as economical as possible.

## Recommended Reading

### Observational Retrospective Study of the Association of Initial Healthcare Provider for New-Onset Low Back Pain with Early and Long-Term Opioid Use

*Kazis LE, Ameli O, Rothendler J, et al. (2019)*

#### Objective

Examine the association of initial provider treatment with early and long-term opioid use in a national sample of patients with new-onset low back pain (LBP).

#### Setting

The study evaluated outpatient and inpatient claims from patient visits, pharmacy claims and inpatient procedures with initial providers.

#### Conclusions

Initial visits to chiropractors or physical therapists is associated with substantially decreased early and long-term use of opioids.

Incentivising use of conservative therapists may be a strategy to reduce risks of early and long-term opioid use.

[Read Now in BMJ Open](#)



A close-up photograph of a chiropractor with glasses and a beard, wearing a light-colored shirt, examining a female patient's neck. The patient is looking towards the camera with a neutral expression. The scene is lit with a warm, golden light. A white-bordered box is overlaid on the right side of the image, containing text.

**How can chiropractors leverage technology to meet patient demands for drug-free pain management and comply with social distancing?**

# Laser Therapy



## What is Laser Therapy?

Referred to as “laser biostimulation”, laser therapy uses light to favor and accelerate the body’s natural healing process.

Laser biostimulation was discovered in the 1960s by Dr. Endre Mester, MD at the Semmelweis University in Budapest. During an experiment to determine if laser radiation would cause cancer in mice, he shaved the hair off their backs, divided them into two groups, and irradiated one group with a low-powered ruby laser of 694nm.

The treated mice did not get cancer. In fact, Dr. Mester noticed that their hair grew back faster than the control group.

Since Dr. Mester published his study in 1967, there have been over 1,000 phase-III, randomized, double-blind, placebo-controlled clinical trials studying laser biostimulation.

Laser therapy works by using light energy to penetrate the tissue where it interacts with chromophores that cause different biological effects to promote tissue regeneration, reduce inflammation and relieve pain.

While each wavelength has its own unique properties, the “therapeutic window” exists between 600nm and 1200nm. There are no chromophores with the ability to filter light emission in this range.

## Advancements in Technology

### Low-Level Laser Therapy (LLLT)

First approved by the FDA in 2001, low-level therapy lasers are typically categorized as Class 3B or lower, meaning the wavelength is above 315nm but does not exceed 0.5 watts.

With lower power, there is less risk of thermal tissue damage. However, it produces limited biostimulation and limited results. Many LLLT patients require longer treatment times and more sessions before seeing adequate results.

### High-Power Laser Therapy

High-power therapy lasers are categorized as Class IV—the highest, most hazardous class.

These lasers may have more efficient results but with higher power comes a greater risk of thermal tissue damage, especially when not used properly.

Ultimately, a laser’s wavelength has a greater influence on healing efficiency than power.



# MLS® Laser Therapy



## The Multiwave Locked System®

The Multiwave Locked System (MLS) uses a patented emission system that synchronizes simultaneous dual wavelengths, leading to more efficient biostimulatory results in less time than traditional LLLT and with less energy than most other Class IV high-power lasers.

MLS Therapy Lasers are categorized as Class IV lasers, but the unique emission system has an increased safety aspect by keeping the temperature below the threshold for damage.

The 2 wavelengths that make up the MLS emission were chosen by ASA Lasers after 3 decades of research.

The continuous 808nm wavelength emission has an anti-inflammatory and anti-edema effect by stimulating blood flow and lymphatic drainage.

The pulsed 905nm wavelength has an analgesic effect by increasing the production of endorphins and enkephalin to inhibit painful sensations.

Combined, these two wavelengths reinforce each other, leading to results that are greater than the sum of its parts.

## Indications for Use

MLS Laser Therapy is suitable for treating a wide variety of conditions, including those that have previously failed to respond to other treatment methods.

In particular, patients affected by lumbago, sciatica, tennis elbow (epicondylitis), bursitis, along with many others, have been seen to experience the fastest relief along with other benefits of MLS.

Indications for MLS can include:

- ▶ Musculoskeletal system trauma, including sprains and strains
- ▶ Degenerative illnesses of articular or neuromuscular origin
- ▶ Inflammatory conditions, such as rheumatoid arthritis
- ▶ Geriatric care, such as diabetic complications
- ▶ Oedema due to circulatory stasis, reduced lymphatic drainage or trauma
- ▶ Superficial lesions, post-surgical healing and other painful conditions of various origins

Download the full MLS Laser Therapy  
**Indications Checklist**



# Robotic Laser Therapy



The MLS technology has been adapted into a robotic laser, the M6, that allows chiropractors to offer laser therapy more efficiently and without the additional labor costs of a dedicated technician.

With the M6's non-contact emission system, patients and staff can practice social distancing and minimize contamination concerns.

Since 2011, Dr. Yeomans has been utilizing a manually operated MLS Therapy Laser that required static positioning of the diode.

For most patients, four points were determined by palpation around the area of com-

plaint. Dr. Yeomans marked each point and a staff member would need to move the laser to the next point every 5 minutes. The average treatment session lasted 20 minutes.

Since Dr. Yeomans upgraded to the Robotic M6 Therapy Laser, his patients have been experiencing better results in shorter treatment times. Now, his laser treatments range from 4 to 12 minutes, with a 6 to 8 minute average.

Without needing to manually move the laser from point to point, his staff can dedicate their attention to other patients and services.

*"We got good results [with my previous laser]. Not as good as the robotic laser... The robotic head allows you to pick a geographic region of squared centimeters, and you basically log in an X and Y coordinate—each views the area you want to treat. There's a scanning procedure that the robotic laser lays out on the skin and you can make it bigger, smaller and then changed the time so that you can get approximately 4 joules per centimeter squared of treatment time."*

*- Dr. Yeomans, DC, FACO*



# Primary Biological Effects

## Photochemical

Direct transfer of energy to the biological sublayers resulting in:

- Enzyme activation
- Increased ATP production
- Modulation of cellular metabolism
- Effect on pain perception threshold

## Photothermal

Conversion of radiation into thermal energy which occurs through the inelastic encounter between excited molecules after the absorption of photons.

- Increased circulation
- Increased supply of oxygen and nutrients

## Photomechanical

Absorption of energy involves the formation of mechanical waves.

- Production of an extracellular matrix important for tissue repair and regeneration
- Acceleration of lymphatic peristalsis
- Re-absorption of edemas
- Reactivation of microcirculation

# Secondary Biological Effects

The combined wavelengths and emissions of MLS Laser Therapy also have secondary biological effects including analgesic, anti-inflammatory and anti-edema effects caused by:

- Blocking pain stimulus conduction
- Increasing endorphin synthesis
- Increasing the caliber and modulation of lymphatic and capillary vessel permeability
- Increasing blood flow to “wash out” algogenic substances and pro-inflammatory molecules.

Biostimulating effects include an increase in the supply of nutrients, oxygen and fibroblasts to the cells as well as cellular function activation, proliferation and differentiation.

In tissues, a modulation of inflammatory processes has been observed, along with the induction of lymphatic and vascular regeneration and the stimulation of endothelial function.

The protection against the formation of scar tissue and hyperkeratotic lesions has also been observed.



# Case Studies





# Plantar Fasciitis

Female  
49 years old  
BMI: 28  
Athletic

## Patient Pain (QVAS)

	Now (Sitting)	Average	Least	Worst
July 8th, 2020	0	3	0	7
August 3rd, 2020	0	2	0	3

The patient experienced her first episode of plantar fasciitis in the summer of 2019. At the time, she elected to receive physical therapy, which included dry needling, use of a boot, a night splint, exercises, and multiple sessions with a physical therapist.

The patient reported that physical therapy took about 4 months to resolve her pain. She was happy with the results until she experienced her second episode in June of 2020 after a prolonged walk.

During her first visit with Dr. Yeomans on July 8th, 2020 she reported an average pain level of 3 out of 10 with her worst pain at a 7 out of 10. Her LEQ assessed at 31%.

After experiencing several laser therapy treatments over the next month, she reported her average pain level as a 2 out of 10 with her worst pain at a 3 and an LEQ of 4%—an 87% improvement.

For the first 15 to 30 seconds of initial morning weight-bearing, the patient will feel a 2 out of 10 pain intensity but has otherwise experienced full resolution in her right foot and 90% in her left foot.

Overall, she is seeing much faster results and higher satisfaction with the M6 MLS Therapy Laser compared to the physical therapy she underwent a year prior.

***“She’s real happy with the results. She said, compared to physical therapy, it’s much, much quicker so she’s elated with her results.”***

***- Dr. Yeomans, DC, FACO***

# Sprain of MPJ Ligament

Male  
46 years old  
BMI: 31

## Patient Pain (QVAS)

	Now (Sitting)	Average	Least	Worst
<b>Dec 13th, 2019</b>	2	8	1	10
<b>Dec 24th, 2020</b>	0	1	0	3
<b>Feb 17th, 2020</b>	0	1	0	2

While working on his car, the patient was kneeling on concrete with his foot, ankle and great toe dorsiflexed in steel-toed shoes for about two and a half hours.

When he stood up he could hardly walk and was later diagnosed with “turf toe”—a sprain in the MPJ ligament from toe hyperextension that is common amongst football players.

His primary care physician referred him to an orthopedist who put him in a surgical boot. When the patient first visited Dr. Yeomans in December of 2019, his average pain level was an 8 out of 10 with his worst pain being a 10

out of 10. After 3 laser treatments, he saw an 80% improvement; After 5, there was a 90% improvement. His average pain level was reduced to a 1 out of 10 and was no longer experiencing pain greater than a 3 out of 10.

On January 2nd, 2020, the patient returned to work and was able to wear steel-toed shoes. He experienced mild exacerbation but two weeks later he showed 90% improvement.

The patient was discharged in mid-February after showing a 99% improvement from laser therapy with an average pain of 1 out of 10.



# Peroneal Palsy

Male  
62 years old  
BMI: 25

## Patient Pain (QVAS)

	Now (Sitting)	Average	Least	Worst
July 20th, 2020	3	4	1	6
July 31st, 2020	0	1	0	2

The patient was experiencing axial lower back pain without radicular pain in addition to drop foot. With his knee and ankle both bent at 90 degrees, his right ankle dorsiflexion active range of motion was 0—he could not move past the starting point.

In his right ankle, he had a 3/5 grade dorsiflexion strength, could not lift his toe or foot at all and was unable to walk on his heels. He also experienced hypoesthesia in his right lateral calf with no lower back pain directional preference.

Dr. Yeomans diagnosed the patient with mechanical back pain and common peroneal palsy, assigned a home exercise routine, and began laser treatments on July 20th of 2020. While the cause of this condition is unknown, it was likely triggered by the patient's job as a mechanic.

Before starting the treatments, his average pain level was a 4 out of 10 with his worst being a 6 out of 10. After his 3rd laser treatment session, he saw a 50% improvement.

After the 6th session, he saw an 80% improvement with a 1 out of 10 average pain level and a 2 out of 10 at worst. He had also regained a normal active range of motion bilaterally and his strength was almost equal to his left ankle.

The patient completed his prescribed laser treatment package and is maintaining his at-home exercise routine to continue strengthening his ankle.





# The Business of Laser Therapy



## Impact of Laser Therapy

With laser therapy, you can expand the types of conditions you treat at your practice and attract new patients.

“Word-of-mouth referrals specific for laser are huge!” Dr. Yeomans explains.

As a cash-based modality, laser therapy can improve your practice’s daily revenue and strengthen cash flow.

Many chiropractors and other physicians even decide to set up their laser therapy services as a separate business. “It’s that practical and efficacious” says Dr. Yeomans.

*“Typically 3 to 6 sessions, I find, is usually enough for acute presentation where as 10 to 12 is needed for chronic presentations.”*  
- Dr. Yeomans, DC, FACO

*“It’s synergistic with manual therapies—everything that we do: spinal manipulation, manual release techniques, and exercise utilization. The ultimate goal, of course, is to make them independent of us so that they can self manage and this gets them over the inflammatory oedemas hump quicker.”*

- Dr. Yeomans, DC, FACO

## Introducing Laser to Your Patients

Offer your patients the option of adding laser therapy to their chiropractic care plan to decrease pain without opioids or other pharmaceutical pain kills.

Laser therapy can also be added to their care plan to help improve function and speed-up their recovery process. With shorter recovery times and less downtime, your patients can get back to work and other activities faster.

## Recommended Reading

Article: Is Laser Therapy Right for Your Practice?

## Patient Attitudes

Laser therapy treatments are typically not covered by health insurance, causing some patients to hesitate before agreeing to add the modality to their care plan.

Ultimately, patients are able to recognize the value of laser therapy and its effectiveness for their pain and inflammation, making them more willing to pay out-of-pocket for a service that allows them to live more comfortably.

Laser therapy can also be paid for with a Health Savings Account, making it more accessible to these patients.

*“Patients typically want time to think about it but those that do wait typically are not happy they waited once they start. Patients’ goals are to reduce pain, accelerate healing and restore function. Laser helps them get their quicker.”*

*- Dr. Yeomans, DC, FACO*

*“Do your due diligence! Do your research and evaluation.*

*Ask yourself how you are currently managing acute pain patients. Do you loose them to primary care because they just hurt too much?*

*And if the answer is yes, you’ve got a spot for laser for that population—not to mention chronic, including things like diabetic neuropathy, and wound healing and post surgical care.”*

*- Dr. Yeomans, DC, FACO*

## Considerations

Laser therapy is a cash-based modality that offers an additional revenue stream to your practice, or the opportunity to establish a separate business around this modality.

Time efficient and highly effective, laser therapy helps those suffering from acute and chronic pain who may otherwise require medications, such as opioids, in the short or long-term.

When considering a laser for your practice, ask yourself: which wavelength(s) does the laser use and why? Is there an option to go robotic? How would my practice benefit from robotic?

More importantly, it is vital that you thoroughly research the technology and investigate the options available to determine which laser is best for your practice.

# Recommended Research



Dr. Yeomans stresses the importance of doing your research when considering a new treatment modality for your practice. Here is a list of his recommended research articles to help you continue learning about laser therapy for pain management in the era of opioid abuse.

## **The Escalation of the Opioid Epidemic Due to COVID-19 & Resulting Lessons About Treatment Alternatives**

Silva MJ, Kelly Z. (2020)

Discusses factors worsening the opioid epidemic during the COVID-19 pandemic and provides insight for strategy change.

<https://pubmed.ncbi.nlm.nih.gov/32672917/>

## **Observational Retrospective Study of the Association of Initial Healthcare Provider for New-Onset Low Back Pain with Early & Long-Term Opioid Use**

Kazis LE, *et al.* (2019)

Examines the association of initial provider treatment with early and long-term opioid use in a national sample of patients with new-onset low back pain.

<https://pubmed.ncbi.nlm.nih.gov/31542740/>

## **Efficacy of High Intensity Laser Therapy in the Management of Foot Ulcers: A Systematic Review**

Alayat, MS, *et al.* (2018)

Assesses the efficacy of high intensity laser therapy (HILT) on wound surface area in patients with foot ulcers.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6181666/>

## **Treatment of Drug-Resistant Fibromyalgia Symptoms using High-Intensity Laser Therapy**

White PF, Zafereo J, Elvir-Lazo OL, Hernandez H. (2018)

Compares low (1w), intermediate (42w) and high (75w) power HILT for the treatment of fibromyalgia.

<https://pubmed.ncbi.nlm.nih.gov/29080932/>

## **Efficacy of Multiwave Locked System Laser on Pain & Function in Patients with Chronic Neck Pain: A Randomized Placebo-Controlled Trial**

Alayat MS, Elsoudany AM, Ali ME. (2017)

Evaluates the efficacies of MLS Laser Therapy and the 830nm laser in the treatment of patients with chronic neck pain.

<https://pubmed.ncbi.nlm.nih.gov/28783464/>

## **A Novel Treatment of Chronic Opioid Use After Surgery**

White PF, Elvir-Lazo OL, Hernandez H. (2017)

Describes a non-pharmacological approach involving a high intensity cold laser to treat patients who became addicted to prescription opioid medication after a major operation.

<https://pubmed.ncbi.nlm.nih.gov/28625446/>

## **High Power Laser Therapy Treatment Compared to Simple Segment Physical Rehabilitation in Whiplash Injuries Involving Muscles & Ligaments**

Conforti M, Fachinetti GP. (2013)

Test the effectiveness of a multiwave high power laser therapy versus conventional simple segment physical rehabilitation.

<https://pubmed.ncbi.nlm.nih.gov/23888293/>





**For more information on MLS® Laser Therapy**

[www.celasers.com/medical](http://www.celasers.com/medical)

**Call for a virtual or onsite therapy laser demonstration**

800.889.4184 x125

Watch the webinar that inspired this eBook at

**[DynamicChiropractic.com](http://DynamicChiropractic.com)**

Original air date: August 20th, 2020

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