



LASERS & TENS

## Class 4 Laser Therapy for LBP

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### WHAT YOU NEED TO KNOW

- In recent years, class 4 laser therapy has gained attention as a potential alternative or adjunctive treatment for pain management.
- In this case study, after four weeks of class 4 laser therapy, the patient reported noticeable improvements in pain and functionality.
- Laser therapy was the only intervention used; there was no spinal manipulation, axial decompression or other interventions utilized with this specific patient.

This case study aims to explore the effectiveness of photobiomodulation with a class 4 therapy laser in treating low back pain. A 45-year-old patient who suffered from chronic low back pain due to degenerative disc disease underwent a series of class 4 laser therapy sessions over a period of four weeks. The study evaluates the outcomes, pain reduction, and functional improvements observed. The results suggest that class 4 laser therapy may offer a promising non-invasive option for managing chronic low back pain.

Low back pain is a common musculoskeletal disorder that affects a significant portion of the population worldwide. It can be caused by various factors, including degenerative disc disease, muscle strain, herniated discs, and spinal stenosis. Traditional treatment options for low back pain range from conservative approaches such as physical therapy and medication to more invasive interventions like surgery.<sup>1</sup> In recent years, class 4 laser therapy has gained attention as a potential alternative or adjunctive treatment for pain management.<sup>2-3</sup>

The broad definition of photobiomodulation is as follows: "A form of light therapy that utilizes non-ionizing forms of light sources including LASERS, LEDs, and broadband light, in the visible and near infrared spectrum. It is a non-thermal process involving endogenous chromophores eliciting photophysical and photochemical events at various biological scales."<sup>4</sup> Class 4 therapy lasers most

commonly use multiple wavelengths of red and infrared laser light to target various chromophores in the tissues.<sup>5</sup>

### Case Background

A 45-year-old patient, with a history of chronic low back pain attributed to degenerative disc disease at the L4-L5 level, was selected for this case study. The patient had previously undergone physical therapy and had been on a regimen of non-steroidal anti-inflammatory drugs (NSAIDs) with limited relief. The patient had no contraindications for laser therapy, and with the patient's consent, class 4 laser therapy was the only treatment method utilized.

Before the initiation of laser therapy treatment sessions, baseline assessments were conducted. These included the visual analog scale (VAS) for pain intensity and the Oswestry Disability Index (ODI) to measure functional disability. The patient's pain intensity was rated as 7/10 on the VAS, and the ODI score indicated a significant impact on daily activities.

### Treatment With Laser Therapy

The patient underwent a series of 12 class 4 laser therapy sessions. The laser parameters were as follows: wavelengths 660, 810, 915 and 980 nanometers (nm); average power 14.3 watts (W); delivery modes were a variety of pulsing frequencies ranging from continuous wave to 5,000 hertz (Hz). The treatment area was the lower back, targeting the affected disc and surrounding soft tissues.

The total dose delivered was 6,692 joules (J), to an area of 400 square centimeters (cm<sup>2</sup>), giving a surface dosage of 16.7 J/cm<sup>2</sup>. The patient received three sessions per week for a total of four weeks.

### Outcome / Discussion

After four weeks of class 4 laser therapy, the patient reported noticeable improvements in pain and functionality. The VAS score for pain intensity decreased from 7/10 to 3/10, representing a 57% reduction in pain. The ODI score also showed a significant improvement, indicating enhanced functional ability. The patient reported reduced difficulty in performing activities of daily living, such as walking, bending and lifting.

The positive outcomes observed in this case study align with the potential benefits of class 4 laser therapy in pain management. The laser's ability to penetrate deep into tissues and stimulate cellular processes, including increased circulation and reduced inflammation, might contribute to the observed pain reduction. Additionally, the non-invasive nature of the therapy and absence of reported side effects make it an attractive option for patients seeking alternatives to medication or invasive procedures.

This case study has limitations. It involved a single patient, and there was no control group. However, the results of this case mirror the outcomes reported by health care practitioners in numerous clinics throughout the U.S. and around the world.

It should be noted that laser therapy was the only intervention used; there was no spinal manipulation, axial decompression or other interventions utilized with this specific patient.

This case study offers preliminary evidence of the potential benefits of class 4 laser therapy in the management of chronic low back pain. The patient experienced significant pain reduction and

functional improvement following a four-week course of laser therapy. However, further research involving larger sample sizes, randomized, controlled trials, and longer follow-up periods are warranted to establish the efficacy and safety of class 4 laser therapy for low back pain.

As a non-invasive and promising modality, class 4 laser therapy could potentially offer a valuable option for patients seeking relief from chronic low back pain, particularly when other treatment modalities have shown limited effectiveness.

### References

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