

let there be light!

light therapy is emerging as the go-to treatment for conditions beyond depression, including chronic pain

BY LAURIE SPRAGUE

Six years ago Gabriele Machado, of Deptford, PA, had lumbar fusion surgery to alleviate her painful symptoms of lower-disc deterioration. But the results weren't what she'd bargained for: During the operation, her sacral nerve was accidentally cut, resulting in cauda equina syndrome (CES) and leaving her right glute and upper thigh numb and in pain. Machado started extensive physical therapy shortly after her surgery but stopped when she exhausted her medical benefits, roughly six months later. Four years ago, still numb and in constant pain and with nowhere to turn, she decided to try Pilates.

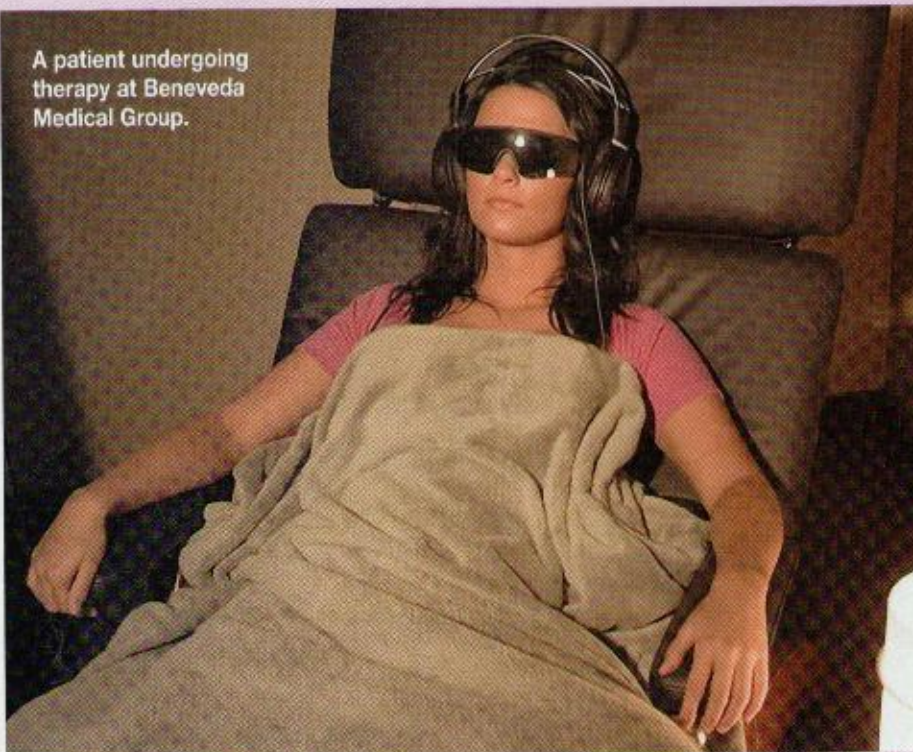
She began taking a mix of private and group classes at Nelson Chiropractic & Pilates Center in Atco, NJ, which is owned by Pilates instructor Kerri Nelson, DC, CCSP, and her husband, Eric, who are both sports chiropractors. "In the beginning just getting on the Reformer was a challenge," says Machado, now 54. So about six months later, she started getting chiropractic adjustments from Eric Nelson, which seemed to relieve

some of the extreme tightness in her lower right side. Then last year, Nelson suggested she try something new: laser light treatments. "I didn't count on it doing a lot," says Machado, "but it was amazing. I saw almost immediate

results." After just two 10-minute sessions, her pain had decreased, she had a lot more flexibility—and her bumpy, red scar tissue was visibly reduced and smoother.

Light has been used to treat a wide range of ailments for centuries, so it's no surprise that today the term "light therapy" has come to mean many different things. Most people have probably heard about the advantages of using light therapy to treat seasonal affective disorder (SAD), but its benefits go light-years beyond improving one's mood. In addition to SAD—where exposure to specific levels of light helps regulate the body's circadian cycles by suppressing the release of melatonin—light therapy has also been shown to help improve symptoms of OCD, jet lag, postpartum depression, some forms of PMS, certain skin disorders like psoriasis and even some cancers. Because of this broad scope, light therapy is offered at a wide range of facilities, including the offices of doctors, physical therapists, chiropractors and dermatologists and now,

A patient undergoing therapy at Beneveda Medical Group.



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fitness studios and spas.

One application of light therapy may be of particular interest to active, athletic people, like Pilates practitioners. Over the past 40 years, a wealth of new research and anecdotal evidence has shown that light therapy can also help reduce pain and inflammation—a boon to anyone who has been injured but wants to maintain their mobility and level of activity. Among the latest, most successful versions of this therapy is low-level laser therapy (LLLT)—also called photobiomodulation, cold-laser therapy and laser biostimulation—in which lasers, light-emitting diodes (LEDs) or intense pulsed light is used to treat conditions ranging from sports injuries, chronic arthritis and tendonitis to carpal tunnel syndrome and fibromyalgia. In fact, the use of LLLT is generating a lot of excitement in sports medicine circles today, largely because it has been shown to reduce healing time, allowing athletes to get back on their feet, and back onto the playing field much faster than traditional treatments alone. And by reducing pain and inflammation, it also helps reduce the need for pain medications.

shedding light on the subject

While it seems incredible that something as simple as light can be used therapeutically for a range of conditions that includes nonsurgical face-lifts, depression, pain and even life-threatening diseases, it is in fact a vast and complex area of study, with years of scientific research behind it. The first thing to understand is that the type of light used therapeutically isn't ordinary lighting. Therapeutic light falls in the middle of the electromagnetic spectrum, meaning ultraviolet light, visible light (like LEDs, cold lasers and colored light or phototherapy) and invisible light (e.g., infrared or near-infrared light). Every type and color of light on the spectrum has a different wavelength, and specific types and frequencies of light have been found to treat various complaints. For example, SAD is usually treated with

bright white or narrow-frequency blue light. Psoriasis can be treated with ultraviolet B (UVB) light, which is a present in sunlight.

The types of light that are most effective in treating pain and inflammation are red and infrared light, both of which stimulate circulation and are used in low-power lasers. LLLT, which can incorporate either red or infrared light, is delivered as a targeted beam, and doesn't burn or destroy tissue like high-powered surgical lasers that are used to cut through tissue. Instead, red and infrared light therapy increases blood flow (which subsequently breaks down the buildup of lactic acid in injured tissue) and ultimately helps to repair damage and decrease swelling.

pain management

In the U.S., lasers were first used by veterinarians to treat tissue damage in horses around 1970, but once their positive results became obvious, the technology was quickly adapted for human use. Today lasers are used by a variety of practitioners, including MDs, physical therapists and chiropractors. They're an increasingly popular option because they can be very directly targeted to an injury or pain source, offering greater precision than standard infrared therapy. According to Raymond Lanzaferme, MD, editor in chief of the journal *Photomedicine and Laser Surgery* and a practicing general surgeon in Rochester, NY, both red and near-infrared light can reduce the compounds that cause pain and inflammation, but only if that light falls in "the sweet spot"—a very specific wavelength at a very specific intensity. "Different wavelengths penetrate at different depths," he says, adding that because of this, the "dosing" is different for everyone, depending on their body and the injury they're being treated for.

Gabriele Machado's chiropractor, Eric Nelson, began hearing good things about LLLT a few years ago. "Many of my colleagues in the sports medicine

community have had great success using LLLT to complement their treatments with professional, Olympic and Ironman athletes," he says. Nelson began using



LLLT himself about a year ago and has found it helpful in treating almost all soft tissue and repetitive stress injuries. In August 2009 he took part in a two-week chiropractic rotation at the U.S. Olympic Training Center in Chula Vista, CA, where he regularly used LLLT, as well as chiropractic adjustments and treatments when working with the Olympians. "It really helped speed up their recovery," he says. "It also decreased swelling pretty efficiently, especially in one athlete's postsurgical knee." Nelson points out that in addition to combating pain and swelling, LLLT also helps stimulate rapid cell growth, promotes faster wound healing, decreases scar tissue and increases nerve-cell regeneration. Machado says she's experienced many of these benefits using a combination of LLLT and chiropractic treatments, but as far as she's concerned, the most important result is that she's no longer in constant pain.

Matthew Goodemote, MPT, founder of Community Physical Therapy and Wellness Center in Gloversville, NY, also treats patients with infrared light—but his method uses LEDs not lasers—and he has seen similar results. Goodemote, whose studio offers Pilates and yoga classes in addition to traditional physical therapy treatments, started using infrared light about five years ago to treat an older patient who suffered from neuropathy. While it was helpful for that patient and others with nerve problems, he noticed that muscular and