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Mitochondrial Dysfunction and Myalgic Encephalitis/Chronic Fatigue Syndrome

Advances in Pain Management with Light Therapy

by Len Saputo, MD, with Jerry Stine, NC

Introduction

Light therapy treatment, also called photonic stimulation or photo-biomodulation (PBM), has shown outstanding clinical effectiveness for pain management that is supported by many peer-reviewed medical journal articles. It is increasingly clear that PBM can provide highly effective treatment for a wide range of painful conditions that previously had few, if any, effective treatment options. PBM is also safe, affordable, and available.

I am confident that any healthcare practitioner who has had the experiences I've had using light therapy would include this treatment as a major part of their approach to managing pain in their patients. Why? Because this technology typically relieves severe pain in minutes with results that are usually long lasting. Most of the time when using light therapy there is no need for pharmaceutical drugs, there are no significant side effects, and it is affordable. It is the most impressive breakthrough in pain management I've witnessed in 55 years of medical practice. So, I'm going to tell you the story of how I learned about light therapy and why it is such a large part of my medical practice, in the hope that it will motivate you to read this entire article and consider incorporating this technology into your own practice.

I promise it will forever change the way you practice pain management and much more.

The Beginning

Some twenty years ago I was casually scanning an advertisement in a medical journal that claimed light could relieve pain in minutes. It claimed that all you had to do is shine this light over areas where there is pain, and it would usually disappear. I took aim at my circular file to dispose of what I thought was just another ad designed to suck in gullible healthcare practitioners looking for a "magical" quick fix.

However, just before I let it fly, I noticed that the sponsor of the ad had a local phone number, and my curiosity got the best of me. I don't know if it was because I wanted to learn something about this "magical" light, or that I felt the need to challenge the bold statements being made, but I decided to call this person. Little did I know that this phone call would change the way I practice medicine forever! It also changed the lives of thousands of my patients who were suffering from pain and disabilities and who were getting little or no real help from conventional treatments.

I reached Maurice Bales, an electrical engineer who had been working with light for about 20 years. He didn't mention at the time that he had been awarded five grants from NASA related to his work on space shuttles, or that he'd mentored PhD students at UC Berkeley in fusion physics for about 15 years before he'd founded his own company that manufactured infrared (IR) light devices and thermal imagers.

When I expressed my doubts about his claims, he insisted that what infrared light therapy could do in clinical practice was so far beyond where mainstream medicine was that it was necessary to see it to believe it.

Maurice invited me to bring a few patients to his office, and he'd do a demonstration with his light. I agreed. Randy, the first person I brought in, had advanced multiple sclerosis (MS) and was for the most part restricted to home care because of weakness, pain in his muscles when he moved, and loss of neurological function. Within 15 minutes of being treated with infrared light he was able to stand more upright, walk with better coordination, and had considerably less pain with movement. Randy was delighted. I was shocked.

Conventional medical therapy for patient with MS provided very limited

The Role of Thermal Imaging in Treating Pain Conditions with Light

Thermography, which shows the heat patterns on the skin surface, can be used to guide treatment. In many cases, especially the complicated/severe ones, the results can be more precise when directed by before and after thermography images.

Heat patterns on the surface of the skin can tell us a lot about the patient's diagnosis, specifically where to treat with light and how much light is needed. They typically add a perspective that goes beyond our patient's history and physical examination. Thermography not only can confirm the diagnosis but also tells us more about its severity, the specific areas of the body that are involved, and sometimes even where the problem originates in the body.

We have treated thousands of patients with painful syndromes over the past 20 years with light in conjunction with thermography using a high resolution, cooled, infrared camera. This approach compares a baseline reference image with a post treatment image seen in real time. There is a high correlation between symptom improvement with the changes in thermal patterns observed during light treatment.

opportunity for any real improvement of this terrible condition and doctors, including myself, had come to accept this. There was no basis for me to believe that it was possible to treat people with MS and see this kind of improvement, and certainly not in just 15 minutes. Over the next few weeks Randy continued to improve, returning to full-time work for several years.

I could barely comprehend what I just witnessed.

Maurice invited me to continue bringing in patients. Over the next three months, every Monday, Wednesday, and Friday from 5:00 to 7:00 PM, we agreed that I would bring two or three of my patients to his office and treat them with his incredibly effective infrared light. Nearly everyone had significant improvement in their level of pain and ability to function. We treated people with neuropathies, neck and back pain, sports injuries, headaches, and many other pain conditions. My mind was having difficulty accepting what I was witnessing because what was happening was unheard of in my prior experience of medicine.

The Success Problem

Now I've come to expect these seemingly miraculous results almost every day. Ironically, over the past two decades I've inherited Maurice's problem of wanting to share information on the impact of PBM with my medical colleagues and having great difficulty getting them to pay attention to the reports of my results or come to my office and observe these short treatments for themselves.

One example that stands out: during a hospital grand rounds lecture Maurice and I gave on light treatment for neuropathies, an MD referred a patient to me. This wasn't just a patient with mild diabetic peripheral neuropathy; this was the most challenging patient in this doctor's diabetes peripheral neuropathy clinic. The patient had a 20-year history of far-advanced, painful diabetic peripheral neuropathy and was on narcotics as well as gabapentin – an extraordinarily challenging case with limited results from conventional treatment and a poor overall prognosis.

This poor patient was on crutches and was suffering from severe pain and numbness in his feet and poor balance. I treated him four times with light over the next week and his pain cleared entirely, the sensation in his feet improved, his balance was much better, and he no longer needed crutches. We discontinued his analgesics in the weeks that followed. These results from light therapy tremendously exceeded any outcome from previous interventions in patients with pain and disease of this severity. The doctor was shocked, as I had been when first seeing the power of PBM, but never sent me another patient. Was this extraordinary recovery so far outside the doctor's experience that he just couldn't take it in and act on what he had seen? Sadly this seemed to be the case. Hopefully this article, with case histories and cited research, will help you see what light therapy can do for your patients and for your practice.

Bringing Science into Light Therapy

Medical doctors are trained to believe that the practice of medicine is science-based. However, when presented with treatments that go beyond certain boundaries, even if supported by research, all too often they simply respond by putting them in their circular files – as I almost did. This is especially true if the technologies are not already included in conventional "standard of care" treatment.

There are now thousands of articles in the mainstream peer-reviewed medical literature that support the use of light therapy to manage pain, a few of which are referenced below. Yet, light treatment remains for the most part unapproved ➤

Lumbar Disc disease full back before and after images

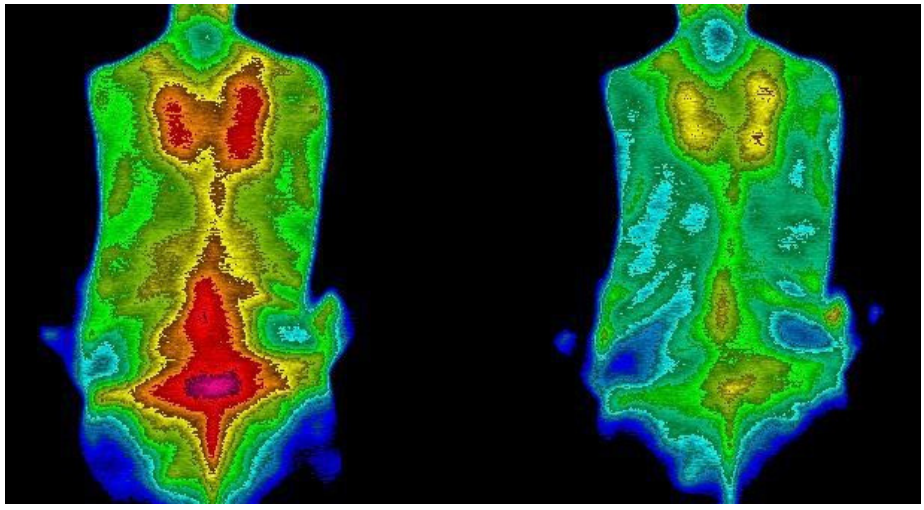

Image 1. The left thermal image was taken before, and the right one after this patient's first treatment. There was immediate relief of 75% of her low back and IT band pain.

Cervical disc disease upper back and neck before and after images

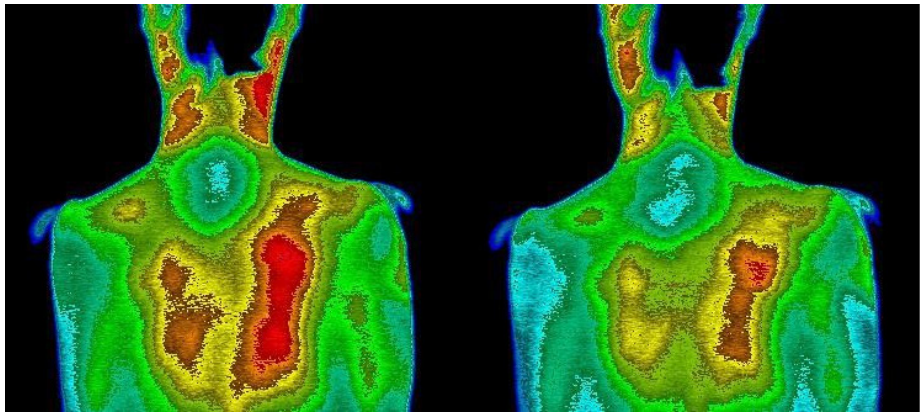

Image 2. The left thermal image was taken before, and the right one after this patient's first treatment. She immediately noticed a 50% increase in range of motion of her neck as well as 75% reduction in neck pain. Over the next several days she had no headaches, which was unusual for her.

➤

by the FDA and is not reimbursable by most insurance companies including Medicare. The benefits of light therapy are enormous for patients because there is almost immediate pain relief, no significant side effects, treatment is affordable, and usually there is no need for pharmaceutical drugs.

The Language of Our Physiology and Biophysics

It should not come as a surprise that light (photons) has a profound influence on our bodies and health. After all, without sunlight almost all life on earth could not exist.

The language of medical physiology is expanding to include biophysics via the interaction of biophotons (photons with biological effects) with biochemistry. There is an ever-growing database of medical/scientific literature documenting the effect of biophotons in regulating biochemistry to promote healing.

What Scientific Research Shows About Light Therapy

Extensive research has shown that PBM induces a broad range of mechanisms of action to affect the pathophysiology of injured cells.

- Increases blood flow by releasing endothelial nitric oxide
- Increases ATP production of injured cells
- Increases cellular membrane potential
- Decreases oxidative stress
- Reduces inflammation and pain
- Reduces excitability of nerves (relieves pain)
- Attracts activated stem cells
- Increases lymphatic drainage
- Stimulates production of collagen
- Increases rate of tissue repair up to 50%
- Kills pathogenic bacteria and viruses directly and through light resonance

When these cellular healing mechanisms are working together, it is easy to see that more normal function of any injured cell may be achieved using light therapy.

Light can effectively treat a range of painful conditions. We are going to focus on musculoskeletal/myofascial pain and neurological pain.

Musculoskeletal/Myofascial Pain

- Back, neck, TMJ[1-5]
- Headaches[6]
- Post-surgical pain and inflammation[7,8]
- Joint inflammation: gout, rheumatoid arthritis (juvenile and adult), osteoarthritis[9,10]
- Traumatic injuries (sports injuries, post-surgical)[11,12]
- Soft tissue conditions: burns,[13,14] carpal tunnel, rashes, ulcerations, tendonitis,[15] plantar fasciitis,[16] wound healing[17]

Neurological Pain

- Neuropathies[18,19]
- Sympathetic maintained pain: CRPS, shingles, trigeminal neuralgia[20]
- Angina pain and post myocardial infarction function improvement[21-23]
- Dental pain[24]
- PMS/endometriosis/genitourinary syndrome of menopause/vaginal restoration[25, 26]

The impact of light therapy on many disorders is not just pain relief but contributes to deeper healing of the affected tissues.

Case Histories

A note on case histories: These cases utilize before and after thermography images to illustrate the impact of light therapy. I use thermography routinely in my practice and find it very useful (see sidebar on page 56 for more on using IR imaging). Thermal imaging is by no means essential. Many practitioners don't use IR cameras at all, or not on every patient every time, and still get results like these illustrated here.

Lumbar disc disease with sciatica and cervical disc disease and headaches. A 58-year-old female was in a serious auto accident 35 years prior in which her car was totaled. Since then, she has had ongoing low back pain, neck and upper back pain, TMJ pain, and incapacitating headaches that start in her neck and radiate to the frontal areas of the head. She has relied on Maxalt for pain management of her "migraine" headaches.

She had four 30-minute treatments with light therapy over an eight-day period and experienced total relief of all pain in her low back, neck, TMJ, as well as her headaches. The reductions in the heat patterns observed match with the reduction of pain in her body. (See Images 1 and 2)

Peripheral neuropathy. A 77-year-old male came in with a three-year history of progressively increasing idiopathic numbness of both feet. He complained of poor balance but fortunately had no pain. Immediately after his first 15-minute treatment with light he noticed more sensation in both feet, improved balance, and greater control when he walked. He had a total of three treatments and was delighted with his ability to walk as he had years ago. (See Image 3)

Complex regional pain syndrome (CRPS). Two years prior, a 25-year-old female, who was suffering from severe depression, threw herself under a train, sustaining an amputation of the right hand at the level of her wrist. She developed unrelenting pain in the stump that was

continued on page 60 ➤

Before and after heat distribution on soles of feet in neuropathy

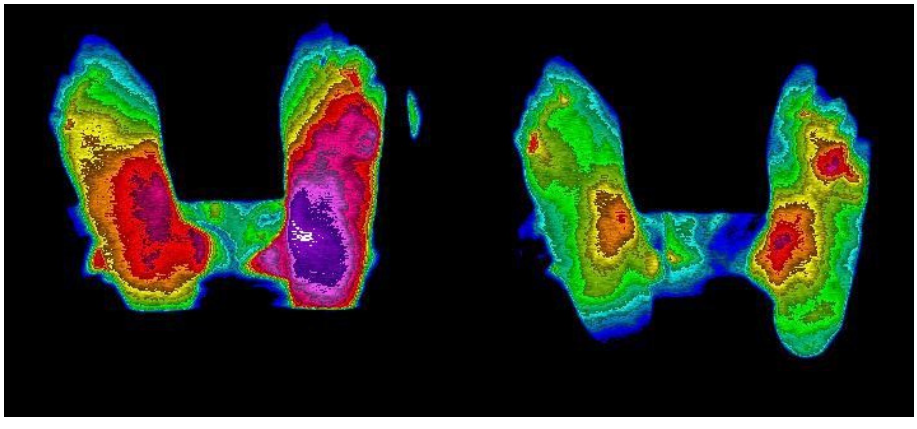

Image 3. The left thermal pattern was before, and the right one was after a 15-minute treatment with light. The patient reported an increase in sensation and balance and felt more stable when walking.

Light Therapy

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treated with multiple surgeries to remove what was thought to be neuromas. The surgeries did not help.

When she came to us for treatment, we imaged her right arm and diagnosed CRPS 1 on thermal imaging (see Image 4). We treated the right arm and forearm with light and within five minutes the thermal patterns on the surface of the skin returned to normal and her pain disappeared. She had a total of three 10-minute treatments over the next three days to stabilize this condition. The value of treating CRPS under the guidance of thermal imaging allows for the administration of just the right amount of light to effectively treat this very difficult disorder.

Prostate cancer metastatic to bone. A 76-year-old male developed hemospermia in February of 2017 and was referred to a urologist for a workup. His PSA was only 8.7, but a prostate MRI showed probable prostate cancer without extension of the cancer beyond the level of the prostate capsule. Prostate biopsies were performed and showed a Gleason 7 prostate cancer.

He chose to manage treatment himself with a wide range of supplements and declined conventional treatment. In December of 2018 he underwent high-intensity focused ultrasound (HIFU) of the prostate, but his PSA rose to 33. By August of 2019 a PET/CT showed spread of the cancer to the local lymph nodes but no distant metastases. He agreed to external beam radiation and androgen suppression with Casodex and Lupron. By December of 2020 his PSA rose to 222 and he developed very painful bone metastases.

He was treated with light therapy in June of 2021, and within five minutes of treatment his bone pain completely disappeared and did not return for several weeks. He started another testosterone blocker (Relugolix) in July. His PSA has dropped to 26. Image 5 shows the thermal changes that resulted from this light treatment.

Thermal Image of circulation improvement in CRPS in amputee

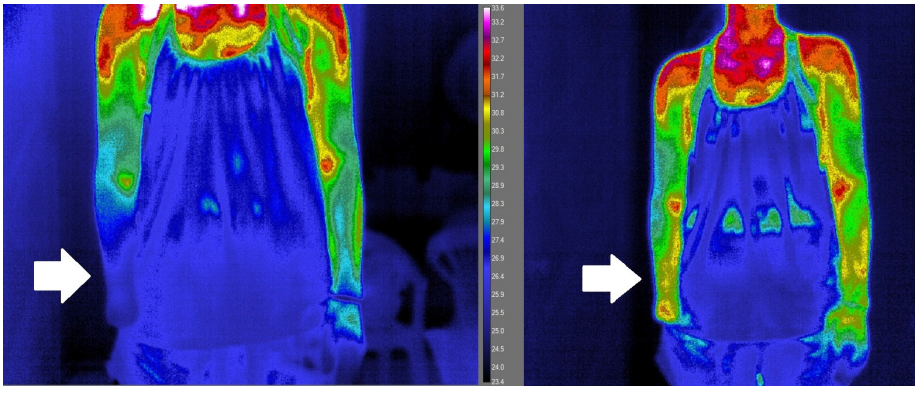

Image 4. The left thermal image shows the pattern of CRPS in the right arm prior to, and the right one immediately after, treatment with light for 10 minutes. The right image shows a return of normal blood flow to the right arm that correlates with the relief of all pain that the patient had reported.

Thermal image of full back in bone cancer pain

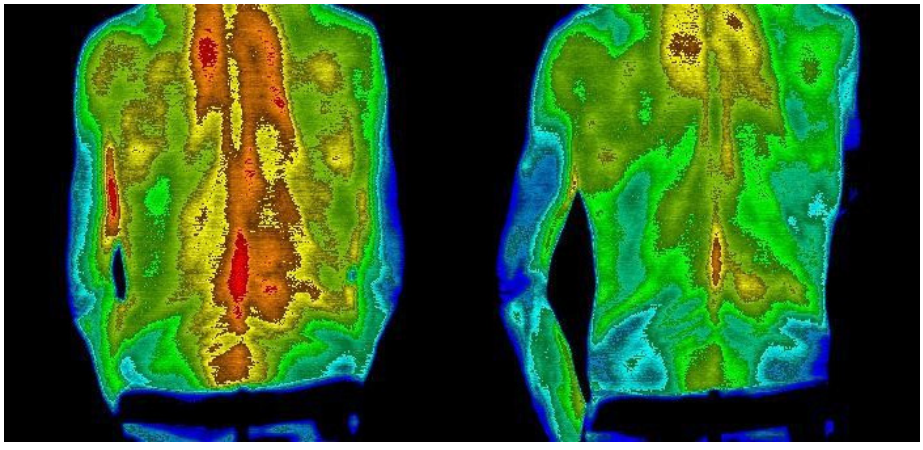

Image 5. The left image shows the thermal patterns before, and the right one after, three minutes of light in this patient who had severe bone pain from prostate cancer metastatic to bone. He had complete relief of pain that lasted for several weeks from this single treatment.

Advances in Light Therapy Over the Past 20+ Years

- Thousands of clinical trials documenting the efficacy of light therapy in the treatment of pain have been published in peer-reviewed medical journals.
- Photon emitter arrays are now available with higher power, with light output in watts compared to milliwatts in earlier devices. This allows for greater depth of penetration, increased physiological effects, and shorter, more affordable treatments.
- Advanced arrays are now being manufactured using many different wavelengths of light, each with its own characteristics and biological effects, allowing the treatment of different tissue types at different depths simultaneously.
- Additional frequencies can be introduced to the emitter arrays, yielding resonance sidebands (frequencies produce by interaction of the primary frequencies) that can broaden its performance (the topic of our next *Townsend Letter* publication).
- The accumulated experience of the early adopters of light therapy, in tandem with ongoing research, has generated a knowledge base for practical, rational, clinical application of light therapy.

Light Therapy at the Tipping Point

Maurice's claims in the advertisement I read more than twenty years ago were accurate. He hadn't exaggerated one bit. Now I can't imagine practicing medicine without using light therapy. The challenge I have now is getting the word out to practitioners, encouraging them to take light therapy seriously and consider it for their practice.-

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