

Managing Chronic Pain with Red Light Therapy



A Guide for Professional Therapists

by Ruth Milner

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MANAGING CHRONIC PAIN WITH RED LIGHT THERAPY

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Introduction

My journey with this modality began as a 'light bulb moment' (pardon the pun!) in 2006 after a phone call with one of my electrotherapy customers in South Africa. My customer, a lovely old school medical device engineer, was excited to tell me that he and his colleague were working on the development of a new and simple LED device. His brief explanation about these particular red wavelengths of light being safe and having a regenerative effect which help to stimulate natural healing was enough for me to go on a research quest and find out more – I haven't looked back since.

From working in the niche electrophysical device sector for over 25 years and knowing how these modalities are effective in assisting the body to heal itself, there is something about light therapies with visible and invisible light which totally fascinates me. I continue to be astounded on a daily basis, in how these gentle but powerful therapies can be life changing for some folk who have been suffering with all sorts of painful ailments for months or even years.

For over 50 years, this wonderful modality, often referred today by lay people as Red Light Therapy was formerly known by health professionals as 'low-level laser therapy.' In 2015 it was named more appropriately with the MeSH term, Photobiomodulation because devices are no longer restricted to laser sourced light. Along the scientific journey in this PBM field, there have certainly been doubters and sceptics who have regarded it as "junk science" and "alternative and complementary medicine" but we are now in a dynamic and exciting era of discovery about this most researched photomedicine.

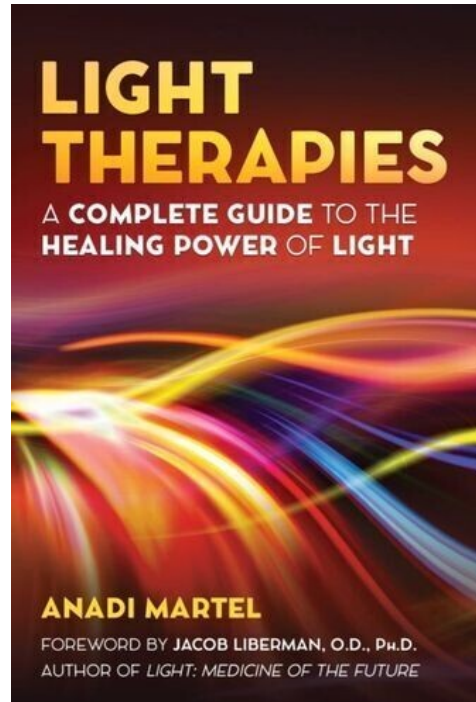


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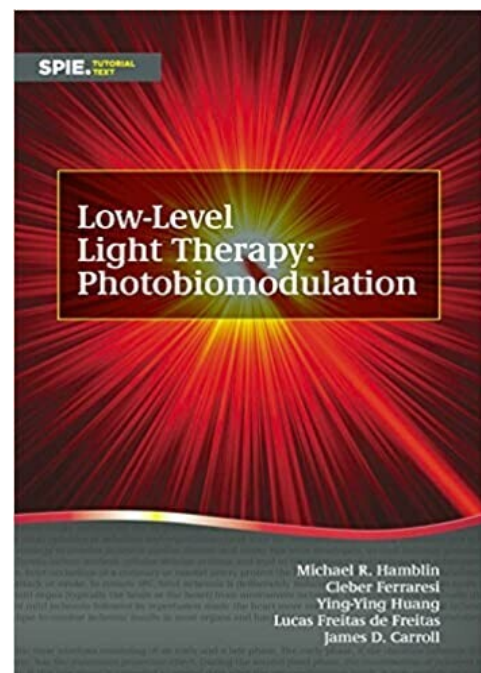
Anadi Martel



As a member of the International Light Association, I share with you what our previous ILA President Anadi Martel, French Canadian Physicist and Author of the incredible book; LIGHT THERAPIES A Complete Guide to the Healing Power of Light says;

“Photobiomodulation is without a doubt the most impressive form of phototherapy because it intervenes at the very source of the cell's regenerative abilities”

The scientific authors of the most up-to-date comprehensive Tutorial Text book “Low Level Light Therapy: Photobiomodulation” published by SPIE (Society of Photo-Optical Instrumentation Engineers), explain the reason for this text book is to “convey to any contemporary scientific reader that photobiomodulation (red light therapy) is becoming increasingly well-founded based on accepted principles of photochemistry, cellular and molecular biology, and physiology.”



A Personal Story of Recovery and Family using Red Light Therapy



A typical example is a family story about my own lovely 78 year old Mum and how this modality can provide a life changing benefit. In 2009 Mum developed crippling sciatica once she was back on her feet after a broken ankle.

Physiotherapy was extremely painful, and all her doctor wanted to do was prescribe strong pain killers which she wasn't able to tolerate due to the awful effects on her sensitive stomach. She was already on long term meds for her Rheumatoid Arthritis with multiple other meds, so collectively all the medication took their toll on her then, very frail body.

Being a very pro natural healing family, we became increasingly concerned about the growing pile of medication Mum was being prescribed with no regard for how they would all work together for someone of her age. She was crippled with the sciatic pain for 4 months and had got to the stage of seriously considering moving out of her beloved home of over 40 years because she could no longer manage the stairs.

Out of desperation, I spoke with Marietjie Venter, Physiotherapist and inventor of the Photizo Light Therapy concept in South Africa. Marietjie kindly gave us a customised protocol for Mum using the earlier large red and near-infrared cluster probe.

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I told Mum she had nothing to lose and she agreed to use it every day as instructed which she could easily do watching TV. Within 7 days, she was fairly confident the pain was reducing, within 14 days she was totally confident the pain was much less. Within a further 2 weeks of daily application, she was pain free and she had a new lease of life. Mum continued to use the device for a few more months with a maintenance dose a couple of times per week and the crippling pain she'd suffered never returned. She was then confident to use the device for any Rheumatoid Arthritis flare ups and had quite a few of her elderly friends lining up to borrow it to help with conditions like diabetic neuropathy and plantar fasciitis.

Every member of my family has one of the handheld models including:

- My sister is a full time carer for her double amputee partner. She uses red light therapy on a daily basis for her partner's phantom limb/neurological pain as well as preventing tissue breakdown.
- My Aunt and Uncle have a Photizo Sport model after my Aunt needed one to originally recover from a nasty fall and broke her shoulder. She is almost blind from macular and myopic degeneration but she uses it regularly around her eye area where she still has some sight even though the doctors said she would lose the rest of her sight rapidly and that was over 6 years ago! My Uncle uses it to help manage the pain in his arthritic knee.
- My nephew used one of the models to help recover from a multiple fractured foot when he had a bad landing competing at dirt jumping. He is now the professional mountain bike instructor at one of the UK's leading extreme bike parks in the UK and fortunately doesn't have too much trouble with his previous injury although it was surgically pinned in several places.
- My partner uses his red light regularly for managing general aches and pains from old biking injuries now he is a veteran cyclist.



What red light can offer you

Whether you are interested to know about the possibilities of this modality for professional or personal use, what we already know from many published studies and systematic reviews is probably just the tip of the iceberg on what red light therapy can offer.

When you are fortunate enough to understand the basics of how red light therapy helps to stimulate self healing and provide pain relief, my view is you won't look back.

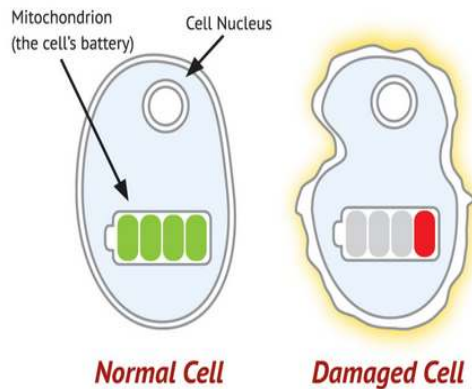
Having a good quality device in your possession, either for professional or home use, it is likely your trusted red light device will be the first thing you will reach for when dealing with any injury. These might include wounds/cuts/grazes, bruises, twisted ankles or any kind of joint pain, neck/back pain, headache, sore throat, painful sinuses or even toothache.

When red light therapy is brought into the mix of your integrated approach, whatever therapy you offer, this modality can help enhance what you do as a health professional.

When you go even further into the science, you will soon realise one of the key messages of this versatile modality is that it can be even more beneficial when used proactively, especially for those with a recurring or chronic pain issues.



How red light therapy works



With injury age or disease a normal cell is compromised. When a cell is compromised, the “battery” of the cell is discharged, thus no energy is produced for normal function. A compromised cell also has insufficient amounts of nutrients and oxygen to sustain the cell, almost like a person being choked.



When an appropriate dose of Red Light Therapy (Photobiomodulation) is applied, the “battery” of the compromised cell immediately recharges. The surrounding inflammation is removed and adequate oxygen and nutrients are ensured



Now the cell is functioning normally again. The “battery” is recharged, producing enough energy for normal functioning. The surrounding inflammation is removed, providing a healthy environment for the cell.

Key Mechanisms

One of the key mechanisms is ATP production which is enhanced by Red Light Therapy/PBM. Light with red and near-infrared wavelengths, using appropriate levels of dose, energises the cytochrome c oxidase enzyme, allowing it to donate electrons to the electron transport chain at a greater rate to increase ATP Production.

ATP is the major carrier of energy in the cells and is made by the cell's power unit, the mitochondria. Without ATP, all cellular functions cease and an increase in ATP allows the cells to accept nutrients faster and to dispose of waste products by increasing the energy levels in the cell. ATP provides the chemical energy that drives the chemical reactions of the cell.

When using an appropriate dose, Red Light Therapy/ PBM has been evidenced to assist with modulating nociceptive and neuropathic pain. There have also been observational reports of benefits for cases with central pain (eg. stroke).

Particular important effects of red light relating to acute and chronic pain reduction identified in literature are:

- Reduction of pro-inflammatory cytokines **and** increase anti-inflammatory cytokines
- Reduce inflammation **by modulating inflammatory cells**
- Reduce oxidative stress
- Improve drainage of the lymphatic vessels
- Increase quality sleep
- Reduction of the excitability of nerve tissue, thereby relieving pain
- Increase in endorphins and serotonin, providing a further systemic pain-relieving and calming effect

How red light benefits you

Red light therapy is a modality you can incorporate into any therapeutic, clinical or holistic practice, no matter what type of conditions you specialise in, to improve treatment outcomes.

When you look even further into the science, one of the key messages of this versatile modality is not to limit the use to occasional or once per week treatment sessions. Research shows it needs to be applied regularly, just like medication or supplements, taking one tablet once per week just doesn't cut it and unlikely to provide measurable clinical outcomes, especially for pain conditions.

Think of any light therapy as a nutrient to be taken regularly and encouraging your patients to hire or buy is likely to improve treatment outcomes and even more beneficial when used proactively and regularly at home. This is especially important for those with recurring pain issues so your recommendation and education about this evidence adds an extra opportunity for you to generate revenue by hiring or selling to patients.

Join us as a Photizo Practitioner

- Receive a discount on every Photizo you purchase
- Sell Photizo to your clients
- Hire Photizo to your clients
- Free website listing
- Free flyers and marketing materials

Find out more:

<https://www.danetrehealthproducts.com/invitation-for-practitioners>

How red light benefits your clients

In the same way as educating your patients/clients to engage with self-help routines such as stretching or exercise, along with good nutrition, recommending the regular use of a red light therapy device will help your clients to take some ownership for their own recovery or managing their condition. Treatment outcomes can often be improved even further than just exercise alone. Reduced pain and inflammation means that they will be able to engage with any exercise regime with less discomfort and keep them more comfortable between treatment sessions.

It's important to make sure you recommend a device that provides an adequate level of dose for pain relief (preferably with Medical CE certification). Beware of the inexpensive machines advertised on non-specialist ecommerce shopping sites. These make all the claims but are not transparent with specification or level of dose. Home use devices still need to deliver a dose level in accordance with recommended dose guidelines by WALT (World Association of Laser Therapy), and daily application is recommended, especially when commencing an initial course of treatment:

https://waltpbm.org/wp-content/uploads/2021/08/Dose_table_780-860nm_for_Low_Level_Laser_Therapy_WALT-2010.pdf



Difference between laser and led devices



LASER Light amplification by stimulated emission of radiation	LED Light emitting diode
Coherent/near coherent	Non-coherent / incoherent
Speckle formation	No speckle formation
Collimated beam/small cover area	Un-collimated beam / wider cover area
Fragile	Robust
Relative low power output vs cost	Higher output vs cost
Loss of power output	No loss of output power
+/- 2000hrs diode life	75,000 hrs diode life (Photizo devices)
Up to Class 3B laser Risk of eye injury Class 4 laser Risk of eye and tissue injury	No risk to eyes or tissue
Protective goggles required for both practitioner & patient	No protective goggles required

Example Case Study

Treating a torn hamstring muscle with a massive haematoma

Patient and condition

Mature male presented with torn hamstring muscle with a massive haematoma.



Patient was on anti-clotting medication.

Duration of Photizo Light Therapy treatment

Three light therapy sessions over a period of five days.

Condition after Photizo light therapy

After five days and three light therapy sessions, the haematoma has almost cleared completely.



Suggestions of how to incorporate red light therapy into your clinical practice

As well as combining with any hands on or holistic treatment session to stimulate blood flow and lymphatic system, having a home-use device available, practitioners hire out Photizo units to their clients to use between appointments. This benefits the client's wellbeing and allows you as an integrative Practitioner to make extra revenue.

This way, clients can also try before they buy for conditions such as:

- Arthritis
- Rheumatoid Arthritis
- Gout
- Spinal issues - cervical, thoracic and lumbar
- Nerve pathology - diabetic neuropathy, carpal tunnel syndrome
- Sciatica and nerve pinching
- Shingles and neuralgias
- Peripheral nerve injuries
- Muscle spasm
- Fibromyalgia
- Trigger points
- Plantar fasciitis
- Chronic pain
- and many more...



Precautions and Observations

Are there any contraindications? Simple answer is NO, but just a few precautions which are normal for any electrophysical modality:

- Do not treat over the area of a tumour
- Do not treat over foetal area
- Do not treat over thyroid area, there is ongoing research but no conclusive evidence whether this modality is effective for any thyroid condition
- Best not to use over an area of tattoo, observational reports of tattoo pigment getting hot, even when applying one dose with LED of reasonable power output - therefore it is advisable to apply around edge of tattoo area
- Patients with chronic conditions may feel tired after a treatment session



Clinical References

From 50 years of research, there are honestly thousands of studies which you can easily access online using appropriate search parameters... here are just a few of the recent ones specific to pain

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6037550/><https://pubmed.ncbi.nlm.nih.gov/34913330/><https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5523874/>

An index of research in alphabetical order by health issue:

<http://www.healinglightseminars.com/laser-therapy/laser-research-library/>



Links to further reading

The most up-to-date scientific reference book we recommend is:

<https://www.spiedigitallibrary.org/ebooks/TT/Low-Level-Light-Therapy-Photobiomodulation/eISBN-9781510614161/10.1117/3.2295638?SSO=1>

This text book has multiple chapters including cellular, tissue and molecular mechanisms as well as all the conditions/pathologies that have been studied with photobiomodulation (low level laser/light therapy). All chapters include multiple scientific references.

A. Martel (2018) Light Therapies: A Complete Guide to the Healing Power of Light, *Healing Arts Press*

A. Whitten (2018) The Ultimate Guide to Red Light Therapy, *Archangel Ink*

J. Tunér, L. Hode: The New Laser Therapy Handbook: A Guide for Research Scientists, Doctors, Dentists, Veterinarians and Other Interested Parties Within the Medical Field. *Prima Books 2010*

<https://www.townsendletter.com/article/460-photobiomodulation-and-pain-management/>



About Ruth Milner



Ruth has worked professionally in the electrophysical modalities industry for over 23 years and more recently specialised in photobiomodulation (PBM Red & Near-Infrared light) for the last 15 years and completed a Diploma in Holistic Light and Colour Therapy with The Colour Ministry.

After being introduced to the International Light Association (ILA) in 2017 by a co-member in lighting design, she has helped open up the [UK Chapter of ILA](#) and is delighted to have the opportunity to help bring the ILA's message to many other like-minded professionals in the UK.



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The majority of her work in PBM for the last 10 years has focussed on working with animal health professionals eg. veterinary/animal therapy & holistic healing sector to develop their understanding and use of modern photobiomodulation with LED technology. All animal species (mainly equine & canine/small pets) have greatly benefited from this modality to promote natural healing from injury/surgery, pain relief and improve recovery times for performance animals.

As co-founder of the business authorised to distribute the Photizo device in the UK which now has Medical CE for human patients, Ruth and the [Photizo UK](#) team are committed to educating health professionals and home users about the concept of affordable home use photobiomodulation.

Discover more information about Photizo Red Light Therapy at
<https://www.danetrehealthproducts.com/>

Email us: info@danetrehealthproducts.com

