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The following cases studies highlight the use of PBM to help treat fibromyalgia.

Photobiomodulation (PBM) Case Studies in Fibromyalgia

Whole body PBM via the PBM TYM – yoga mat is advocated as per the reduced pain and medication usage in patients

Whole-Body PBM Feasibility Trial (Fitzmaurice et al., 2023)

- **Design:** Single-arm feasibility study in a small patient group (21 fibromyalgia patients screened; 19 completed). Participants received PBM as the sole intervention over ~6 weeks.
- **PBM Protocol:** Whole-body PBM using a full-body light bed (NovoTHOR®) with 2,400 LEDs emitting red (660 nm) and near-infrared (850 nm) light. A total of 18 sessions (each 6–20 minutes) were delivered over ~6 weeks. The patient lies supine under LED panels, exposing the entire body to light. No other treatments were added.
- **Outcomes:** *Feasibility* was high (100% adherence to treatment schedule) with no adverse events. Patients showed **clinically and statistically significant improvements** across multiple domains: **pain**, fatigue, sleep quality, stiffness, anxiety, and depression all improved after 6 weeks. Fibromyalgia Impact Questionnaire (FIQ/FIQR) scores improved such that 10 of 19 patients shifted from "severe" into **moderate or mild** symptom categories post-therapy. Self-reported cognitive symptoms ("fibro fog") also improved, and although objective cognitive tests showed only a modest change, patients subjectively noted better concentration. By 24-week follow-up, benefits in fibromyalgia-specific quality of life and symptoms were largely maintained. Several patients were able to **reduce or discontinue pain medications** following PBM treatment.
- **Limitations:** This was an uncontrolled pilot (no placebo group), and the sample size was small. As a feasibility study, it demonstrates safety and positive trends but cannot confirm efficacy definitively. The results support conducting larger **controlled trials** to validate PBM's benefits in fibromyalgia.

Whole-Body PBM vs Placebo Trial (Navarro-Ledesma et al., 2023)

- **Design:** Randomized, triple-blinded, placebo-controlled trial in 42 fibromyalgia patientspmc.ncbi.nlm.nih.gov. Participants were split between true PBM and sham PBM

groups, with patients, therapists, and assessors blinded to treatment. Outcomes were measured at baseline, mid-therapy, end-of-therapy, and 2 weeks post-therapy.

- **PBM Protocol:** Whole-body PBM delivered via a full-body light bed (likely the NovoTHOR system)pmc.ncbi.nlm.nih.gov. Treatments were given **3 times per week for 4 weeks** (total 12 sessions)pmc.ncbi.nlm.nih.gov. Each session involved 20 minutes of red and near-infrared light exposure (50:50 mix of 660 nm and ~850 nm LEDs) over the entire bodypmc.ncbi.nlm.nih.gov. The bed's irradiance was low-level (~0.03 W/cm²) delivered in continuous wave, providing a gentle, non-thermal dose. The placebo group used an identical bed with lights off (and heat/goggles mimicking an active session) to maintain blindingpmc.ncbi.nlm.nih.gov.
- **Outcomes:** After 4 weeks, the **PBM group had significant improvements** compared to placebo. **Pain levels** (e.g. numerical ratings) were significantly reduced in the active PBM group at end of treatment and remained lower at 2-week follow-up ($p \leq 0.001$)pmc.ncbi.nlm.nih.gov. **Quality of life** (FIQR scores) improved in the PBM group – with statistically better scores emerging even by mid-treatment (after 6 sessions) and further improvement by the end of therapy and follow-uppmc.ncbi.nlm.nih.gov. In addition, PBM-treated patients showed beneficial changes in **psychological factors**: they had reduced kinesiophobia (fear of movement) immediately post-treatment and at follow-up, and better self-efficacy (confidence in managing symptoms) by follow-uppmc.ncbi.nlm.nih.gov. No significant changes in pain catastrophizing were seen between groupspmc.ncbi.nlm.nih.gov. These findings suggest whole-body PBM produced multifaceted benefits (analgesic and improved daily function/mood) beyond placebo in the short term.
- **Limitations:** The trial had a **short follow-up** (only 2 weeks post-treatment, so long-term durability is unknown) and a moderate sample size. While triple-blinding strengthens the findings, the study lasted only one month of therapy; fibromyalgia is chronic, so longer trials are needed. Additionally, outcomes like fatigue or cognitive fog were not specifically reported in this study. The authors conclude that PBM shows promise as a **novel, non-pharmacological therapy** for fibromyalgia, pending confirmation by larger and longer-duration studiespmc.ncbi.nlm.nih.gov.

These cases can also be well treated with the PBM TYM which provides full body light exposure which can stimulate full body entrainment effects

Transcranial PBM Case Series (Cassano et al., 2020)

- **Design:** Open-label case series (retrospective chart review) involving **nine women with fibromyalgia** who had incomplete response to standard treatments. All patients continued their usual medications during the study; PBM was offered as an off-label add-on. Symptom severity was tracked from baseline to 4 weeks.
- **PBM Protocol: Transcranial photobiomodulation (t-PBM)** was applied using an LED-based device (Omnilux New-U, Photomedex) positioned on the forehead. Treatment targets were two standardized frontal locations (EEG positions F3 and F4, roughly over the left and right prefrontal cortex) per session. **Wavelength:** 830 nm near-infrared.

Dose per site: ~33 mW/cm² irradiance delivering 40 J/cm² over 20 minutes (about 2.3 kJ energy per session). Sessions were given **twice weekly for 4 weeks** (total 8 treatments). This protocol aimed to modulate central nervous system activity (mitochondrial function, neural plasticity) to alleviate fibromyalgia symptoms.

- **Outcomes: Tolerability** was excellent – no adverse effects were reported, and all nine patients completed the 4-week course. There were notable **reductions in pain and global symptom severity** over the month. Average pain ratings (0–10 scale) fell by almost half – from about **8/10 at baseline to 4/10 after 4 weeks**clinicalcasereportsjournal.com – a statistically significant improvement ($p < 0.001$). Patients' overall condition improved according to clinician assessments: the mean Clinical Global Impression-Improvement (CGI-I) score was ~2.7, indicating patients were **"much improved" to "minimally improved"** on average (with none worsening). While this was primarily a pain-focused evaluation, many participants also reported feeling **better mood and less fatigue** anecdotally (consistent with reduced pain). Cognitive benefits were not specifically measured, but some patients noted better mental clarity as pain eased (per authors' discussion).
- **Limitations:** This was an uncontrolled series with a **small sample size**. Without a placebo group, improvements could partly reflect a placebo response or regression to mean (though the magnitude of pain reduction was considerable). The follow-up was short (outcomes assessed at 4 weeks, no long-term data). Additionally, all patients were women around mid-life, so generalizability to men or younger patients is unknown. Despite these caveats, the case series provides preliminary evidence that **transcranial NIR light therapy can significantly reduce fibromyalgia pain** in difficult cases, warranting controlled trials to verify efficacy.

  This case illustrates dual treatment modalities and PBM can be delivered specifically with SPRB and also TYM

Combined Laser + Ultrasound ("Photosonic") Case Report (Aquino et al., 2023)

- **Design:** Single-patient **case report** with an unusually long follow-up. A 59-year-old female fibromyalgia patient was followed for *42 months* after completing a course of PBM-based therapyrepositorio.usp.br. This patient had severe fibromyalgia for decades (symptoms since the late 1980s) with classic features including widespread pain, extreme fatigue, poor sleep, depression/anxiety, and pronounced cognitive dysfunction ("fibro fog")repositorio.usp.br. She had tried numerous medications (analgesics, antidepressants, anticonvulsants, etc.) with limited successrepositorio.usp.br.
- **PBM Intervention:** The treatment combined **low-level laser therapy and therapeutic ultrasound** applied together – termed "photosonic treatment"omicsonline.orgomicsonline.org. A specialized device (RECUPERO®, developed at Univ. of São Paulo) delivered **660 nm laser light (100 mW)** and **1 MHz ultrasound** concurrently through a single proberepositorio.usp.bromicsonline.org. Uniquely, the therapy was applied not to tender points but to the **palms of the hands** (bilaterally). Rationale: applying PBM at the hands may induce systemic effects by stimulating peripheral nerves and circulatory pathways (vagus nerve, etc.), potentially

reducing central sensitization and even lowering intracranial pressurerepositorio.usp.brrepositorio.usp.br. The patient received **10 sessions** (approximately 2 sessions per week over 5 weeks)omicsonline.orgomicsonline.org. Each session lasted a few minutes per hand (3 min per hand in the research protocol) with the laser/ultrasound probe moving constantly over the palmomicsonline.orgomicsonline.org.

- **Outcomes:** The patient experienced a **remarkable improvement** following therapy, with benefits sustained over 3.5 years of observation. **Pain was almost completely eliminated**: her visual analog scale (VAS) pain score dropped from 10/10 before treatment to 0/10 after the 10th session, and remained at 0 (no pain) at all follow-ups up to 42 months. **Functional status and quality of life** improved drastically – her Fibromyalgia Impact Questionnaire (FIQ) total score went from 104 (very severe impact) pre-treatment to 5 immediately after treatment, and eventually to 1 at 42 months (essentially symptom-free). This >95% improvement in FIQ reflects major gains in daily function. **Fatigue and sleep** issues resolved: for example, her Pittsburgh Sleep Quality Index improved from a poor 19 (baseline) to 0 (excellent sleep) after treatment, remaining 0 at all check-ins. **Mood and cognitive symptoms** also dramatically improved. Anxiety and depression scores (HADS) normalized (both reduced ~95–100% from severe to minimal), and the patient reported that her fibro fog cleared – she was able to resume mental activities to the extent of starting a postgraduate degree (a noteworthy life change attributed to improved cognition)repositorio.usp.br. Notably, these improvements were not transient; the patient maintained near remission-level status in pain and other domains for years after the short treatment course.
- **Limitations:** As an *n*=1 case, these results must be interpreted with caution. Such a profound, enduring recovery is unusual in fibromyalgia and could be influenced by placebo effect or other concurrent lifestyle changes; without a control or replication, causality is not certain. The authors note that this combined **laser+ultrasound approach** is used in other fibromyalgia patients for pain relief, but individual responses can varyrepositorio.usp.br. Another limitation is that the patient's medication adjustments (if any) during follow-up were not detailed, which could affect outcomes. Nonetheless, this case illustrates the potential of an innovative PBM protocol to achieve near-complete remission of fibromyalgia symptoms (including **pain, sleep, mood, and cognitive clarity**) in a real-world scenariorepositorio.usp.brrepositorio.usp.br. It underscores the need for further clinical studies on "photosonic" therapy in larger patient samples to see if such outcomes can be consistently reproduced.
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Sources: Recent clinical studies and case reports as cited above, including open-access publications in peer-reviewed journals and clinical trial results on PBM for fibromyalgiapmc.ncbi.nlm.nih.govrepositorio.usp.br. Each provides detailed insights into PBM protocols and patient outcomes for fibromyalgia and the positive outcomes that patients with fibromyalgia can achieve to reduce pain and improve their quality of life

Disclaimer

The information provided in this document is for educational and informational purposes only. It is not intended as a substitute for professional medical advice, diagnosis, or treatment. Individuals should always consult with a licensed physician or qualified healthcare provider before beginning any new therapy, including the use of photobiomodulation (PBM) devices. PBM devices such as the SPRB and GPRB are wellness tools designed to support general health and well-being. They are not medical devices and are not intended to diagnose, treat, cure, or prevent any disease or medical condition. No medical claims are made or implied. Results may vary based on individual factors, and PBM should not be considered a replacement for appropriate medical care.