



Low-Level Laser Light Photobiomodulation in the Management of Chronic Pain

Shane N Hennessy¹ , Gerard D Corcoran^{1*} 

¹Physiotherapy Clinic, Old Fort Road, Cork, P31 YH66, Ireland

*Correspondence author: Gerard D Corcoran, Physiotherapy Clinic, Old Fort Road, Cork, P31 YH66, Ireland; E-mail: gdcorcoran1@gmail.com

Citation: Hennessy SN, et al. Low-Level Laser Light Photobiomodulation in the Management of Chronic Pain. *J Ortho Sci Res.* 2026;7(1):1-3.

<https://doi.org/10.46889/JOSR.2026.7112>

Received Date: 10-01-2026

Accepted Date: 25-02-2026

Published Date: 04-03-2026



Copyright: © 2026 The Authors. Published by Athenaem Scientific Publishers.

This is an open access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

License URL:

<https://creativecommons.org/licenses/by/4.0/>

Editorial

The recent review by Marks suggesting Low-Level Laser Light Photobiomodulation (LLLT) as a potential therapeutic option in osteoarthritic pain is timely, coming when standard management of chronic pain is being critically reviewed because of multiple concerns[1]. For example, a 2025 editorial in the British Medical Journal (BMJ) states that chronic pain management is due a “major rethink” [2]. In the same issue, the BMJ issued a strong recommendation against the use of spinal injections for both lumbar and cervical chronic pain, whether axial or radicular [3]. This was based on a GRADE assessment of reviews and studies concluding that there is no high certainty evidence of benefit of such injections, which also carry a small risk of harm, and are costly. There were objections to this recommendation but it was not retracted.

Another concern in chronic pain management is the use, leading to overreliance, of potentially toxic pharmacological agents including NSAIDs, opioids and others. This is a major issue in the US and is becoming so in Europe, especially in the UK and Ireland [4]. The increasing use of such agents continues and, for example, gabapentin use has increased dramatically in the US from 24 million prescriptions in 2010 to 59 million in 2024 [5]. It is of note that gabapentin is not approved for most forms of chronic pain and this off label use, highlights further the complexity of chronic pain management.

In addition to concern about overuse, there is a reluctance among some patients to initiate opioid therapy, even when indicated, and a tendency to worry about side-effects while taking them [6].

Making pain management even more difficult, as indicated in the BMJ editorial and others, is the fact that assessment of the effectiveness of chronic pain interventions is complex and difficult to interpret, because of the multifactorial nature of pain and pain response [7].

All this means that other, often non-pharmacological, treatment modalities are receiving renewed interest for chronic pain management. Among these, LLLT, addressed by Marks in her review, has been in use in various forms for many years [1]. Early trial and meta-analysis data, although positive, showed inconsistencies relating to trial size and parameters, dosage, wavelength differences and duration of treatment, as pointed out by an early Cochrane review [8]. More recent and more rigorous, trials and meta-analyses have been much more consistently supportive of LLLT use for chronic pain.

For example, LLLT use in Low Back Pain (LBP) has been the subject of much recent work. Two recent meta-analyses agree that LLLT, used alone or when combined with an exercise rehabilitation programme benefits LBP, both acute and chronic [9,10]. A further meta-analysis concludes that for discogenic LBP, LLLT is significantly better than placebo, especially when used in conjunction with standard physiotherapy [11]. Similar findings have supported LLLT use in cervical pain with significant

benefits noted when used as a stand-alone treatment [12]. In knee osteoarthritis, where the modality has been extensively studied, it has been shown to benefit pain and function, used alone or with a structured physical exercise programme [13,14]. On the basis of this work, the analgesic effect highlighted by Marks, obviously valuable in itself, appears to augment physical rehabilitation programmes. In addition, the availability of home use devices, when meeting FDA and/or CE standards and used with professional direction, may help in giving patients with chronic pain a sense of treatment autonomy without adverse effects.

The conclusions throughout these analyses, that LLLT use is beneficial for pain and, in conjunction with an exercise programme, is beneficial for both pain and function should be noted, along with its exceptionally good safety profile, as emphasised by Marks [1]. We agree with this author that more adequately powered studies with more standardised protocols should be carried out. What is clear is that the risk benefit analysis is increasingly supportive of the use of LLLT, particularly when part of a professionally overseen pain management programme that includes exercise.

Keywords: Low-Level Laser Therapy; Pain; Low Back Pain

Conflict of Interest

SNH is a Chartered Physiotherapist and includes use of laser-based devices in clinical practice.
GDC is an independent medical advisor and has no conflict of interest

Funding Statement

This research did not receive any specific grant from funding agencies in the public, commercial or non-profit sectors.

Acknowledgement

None.

Data Availability Statement

Not applicable.

Ethical Statement

The project did not meet the definition of human subject research under the purview of the IRB according to federal regulations and therefore, was exempt.

Informed Consent Statement

Informed consent was taken for this study.

Authors' Contributions

All authors contributed equally to this paper.

References

1. Marks R. Status of low-level laser light photobiomodulation osteoarthritis findings 2025. *J Ortho Sci Res.* 2025;6(3):1-11.
2. Ballantyne J. Editorial. *BMJ.* 2025;388:r179.
3. Busse JW, Genevay S, Agarwal A, et al. Commonly used interventional procedures for non-cancer chronic spine pain: A clinical practice guideline. *BMJ.* 2025;388:e079970.
4. Pierce M, Van Amsterdam J, Kalkman GA, Schellekens A, van den Brink W. Is Europe facing an opioid crisis like the United States? An analysis of opioid use and related adverse effects in 19 European countries between 2010 and 2018. *Eur Psychiatry.* 2021;64:e47.
5. Strahan AE, Rikard M, Schmit K, Zhang K, Guy GP. Trends in gabapentin prescriptions in the United States, 2010 to 2024. *Ann Intern Med.* 2025;78(12).
6. Nichols VP, Toye F, Eldabe S, Sandhu HK, Underwood M, Seers K. Experiences of people taking opioid medication for chronic non-malignant pain: A qualitative evidence synthesis using meta-ethnography. *BMJ Open.* 2020;10:e032988.
7. Alhowimel A, AlOtaibi M, Radford K, Coulson N. Psychosocial factors associated with change in pain and disability <https://doi.org/10.46889/JOSR.2026.7112>

- outcomes in chronic low back pain patients treated by physiotherapist: A systematic review. *SAGE Open Med.* 2018;6:1-8.
8. Brosseau L, Welch V, Wells G, de Bie R, Harman K, Gam A, et al. Low-level laser therapy (classes I, II and III) for treating osteoarthritis. *Cochrane Database Syst Rev.* 2004;(issue not specified):CD002046.
 9. Chauhan D, Sharma S. Adjunctive approach to therapeutic laser and exercise therapies in alleviating pain and disability in patients with low back pain: A systematic review. *J Lifestyle Med.* 2024;14:69-79.
 10. Wang XQ, Wang YI, Witchalls J, Han J, Zhang ZJ, Page P, et al. Physical therapy for acute and subacute low back pain: A systematic review and expert consensus. *Clin Rehabil.* 2024;38:715-31.
 11. Lee SJ, Noh SJ, Kim JR, Park KB, Jeon SR, Hong Y, et al. Effectiveness and safety of low-level laser treatment for lumbar disc herniation: A systematic review and meta-analysis. *Perspect Integr Med.* 2023;2:155-63.
 12. Chow RT, Johnson MI, Lopes-Martins RAB, Bjordal JM. Efficacy of low-level laser therapy in the management of neck pain: A systematic review and meta-analysis of randomised placebo- or active-treatment controlled trials. *Lancet.* 2009;374:1897-908.
 13. Stausholm MB, Naterstad IF, Joensen J, Lopes-Martins RAB, Saebo H, Lund H, et al. Efficacy of low-level laser therapy on pain and disability in knee osteoarthritis: Systematic review and meta-analysis of randomised controlled trials. *BMJ Open.* 2019;9:e031142.
 14. Stausholm MB, Naterstad IF, Alfredo PP, Couppé C, Fersum KV, Leal-Junior ECP, et al. Short- and long-term effectiveness of low-level laser therapy combined with strength training in knee osteoarthritis: A randomised placebo-controlled trial. *J Clin Med.* 2022;11:3446.

About the journal



Journal of Orthopaedic Science and Research is an international, peer-reviewed, open-access journal published by Athenaeum Scientific Publishers. The journal publishes original research articles, case reports, editorials, reviews, and commentaries relevant to its scope. It aims to disseminate high-quality scholarly work that contributes to research, clinical practice, and academic knowledge in the field.

All submissions are evaluated through a structured peer-review process in accordance with established editorial and ethical standards. Manuscripts are submitted and processed through the journal's online submission system.

Manuscript submission: <https://athenaeumpub.com/submit-manuscript/>