

# Can low-level laser therapy reduce the pain associated with temporomandibular joint disorder?

## Clinical Problem

Temporomandibular disorders (TMD) are disorders of the temporomandibular joint (TMJ), masticatory muscles, and related structures, with pain as the most common and debilitating symptom. The pathophysiology of TMD remains unclear, yet it continues to affect individuals world-wide with an incidence of 21.5%-50%. Among the different treatment options for TMD, low-level laser therapy (LLLT) appears as a promising solution; however, results supporting its efficacy have been controversial to date.

## Clinical Question

In adult patients with chronic pain attributed to temporomandibular disorders (myofascial pain, disc displacement), how effective is LLLT in comparison to placebo or conservative treatments (massage therapy, physiotherapy, occlusal splint) in reducing temporomandibular disorder (TMD) pain during follow-up of at least 3 months?

## Evidence Search

Search date: Oct 15, 2020  
PubMed results: 49 evidence sources  
Additional search: Cochrane Reviews Database, C.A.T. Database, TRIP Database, Journal of Evidence Based Dental Practice

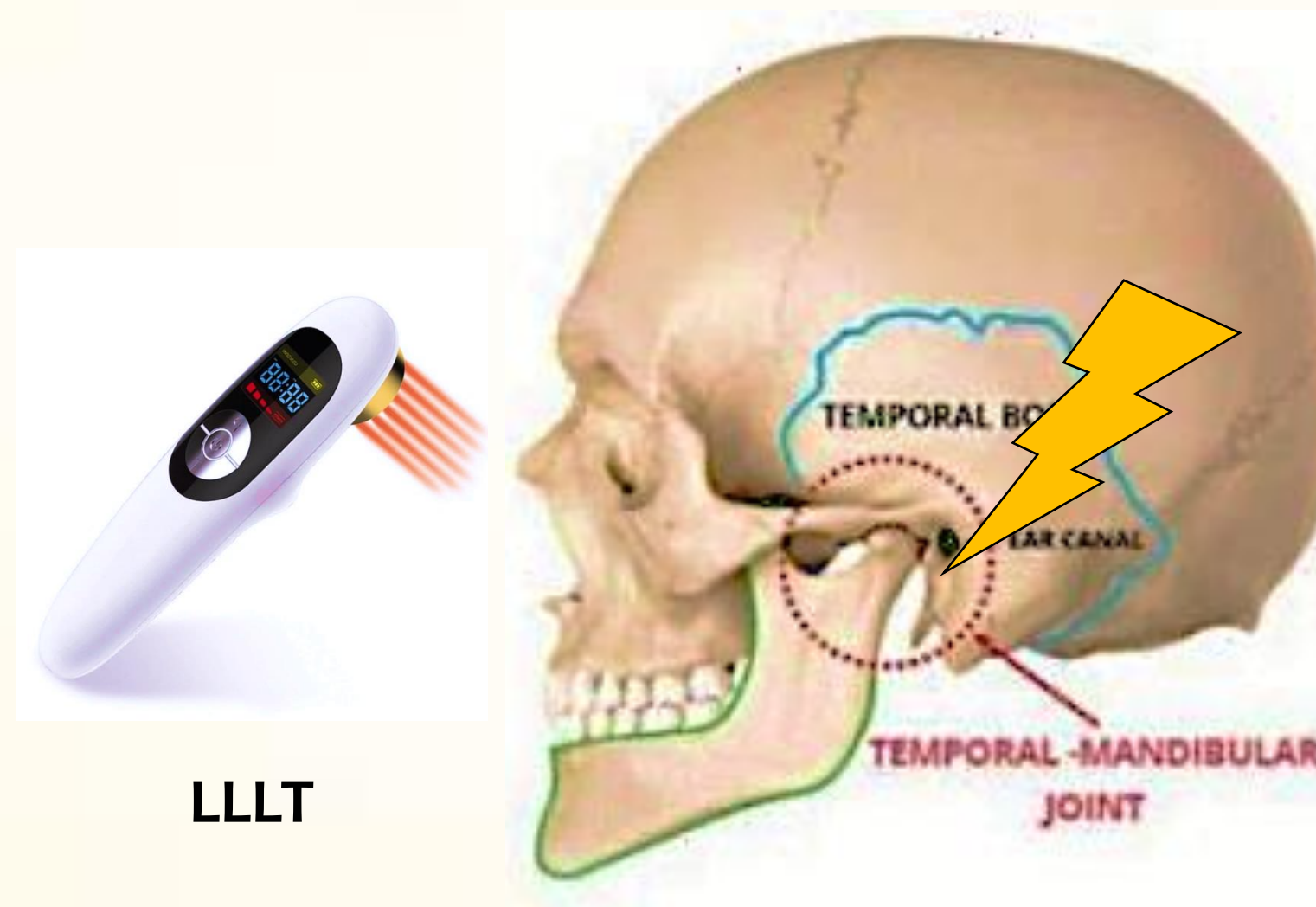
## References

Xu GZ et al. *Low-Level Laser Therapy for Temporomandibular Disorders: A Systematic Review with Meta-Analysis*. *Pain Res Manag*, 2018.

Herpich CM et al. *Intraoral photobiomodulation diminishes pain and improves functioning in women with temporomandibular disorder: a randomized, sham-controlled, double-blind clinical trial: Intraoral photobiomodulation diminishes pain in women with temporomandibular disorder*. *Lasers Med Sci*, 2020

## Clinical Bottom Line

There is moderate quality evidence concluding that low-level laser therapy may be effective in pain reduction in chronic pain attributed to TMD compared to placebo or conservative treatment.



TMJ disorder

Alleviated pain symptoms

## Acknowledgements

This CAT was made possible through the support of Walid Al Soneidar, Dr. Firoozeh Samim and Dr. Svetlana Tikhonova.

## Results

### Evidence Quality

- Participants who received LLLT for TMD related pain had a VAS score reduction of -14.05mm after treatment compared to before treatment (Xu et al. 2018). The results were statistically significant but not clinically meaningful or decisive.
- Women with myogenous or mixed TMD who received LLLT had a VAS score reduction of -27.0mm after six sessions compared to placebo biomodulation (Herpich et al. 2020). The results were statistically significant and clinically meaningful but not decisive.

### Strengths

- Multiple databases searched, double-blind, simple randomization, inclusion/exclusion criteria, placebo-controlled, evidence quality analysis (modified JADAD scale), no conflicts of interest

### Limitations

- Small sample size, selection/publication/language bias, short term follow up, methodological flaws, clinical heterogeneity of included studies

## Applicability

- 7 different countries studied, representing Canada's diversity
- Cost partially covered by private insurance- feasibility in a Canadian private dental practice
- Safe (non-invasive, low risk of adverse effects)
- Relevant patient outcomes (pain intensity, TMJ function, psychological impact)
- Sufficient follow-up period to see short term and long-term effects

The clinician should weigh the applicability of LLLT for their patients and use their clinical judgement to decide whether they would like to employ it as an adjunct to therapy.