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Review

> [Photomed Laser Surg](#), 36 (2), 61-71 Feb 2018

The Effect of Low-Level Laser Therapy on Bone Healing After Rapid Maxillary Expansion: A Systematic Review

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Abstract

Objective: The study aimed to systematically appraise the evidence on the effects of low level laser therapy (LLLT) on bone healing following rapid maxillary expansion (RME).

Methods: Electronic search was performed in MEDLINE, Scopus, and Embase databases using appropriate Medical Subject Heading terms, with no time restriction. ClinicalTrials.gov (www.clinicaltrials.gov) was also searched using the terms "low level laser therapy" and "maxillary expansion."

Selection criteria: Original research articles on human clinical trials that involved both RME and LLLT were included. Animal studies were also assessed on an exploratory basis.

Results: The search strategy resulted in 12 publications (4 randomized controlled trials, 8 animal studies). In human studies, bone density was assessed radiographically (either two-dimensional or three-dimensional imaging). Regardless of the discrepancies in the intervention protocols, the total of the trials revealed that LLLT had stimulatory effects on bone regeneration after RME. The studies in animal models measured the formation and maturation of new bone qualitatively or quantitatively.

Conclusions: Despite the limited evidence, LLLT seems to be a promising intervention for stimulating immediate bone regeneration and healing after midpalatal suture expansion. Long-term, randomized clinical trials are needed to formulate safe results and establish a reliable clinical protocol, rendering the method clinically applicable.

Keywords: LLLT; low level laser therapy; orthodontics; rapid maxillary expansion; systematic

review.

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