

## The Efficacy of Class IV Diode Laser in the Treatment of Patients with Chronic Neck Pain: A Randomized Controlled Trial

**Authors :** Mohamed Salaheldien Mohamed Alayat, Ahmed Mohamed Elsoudany, Roaa Abdulghani Sroge, Bayan Muteb Aldhahwani

**Abstract :** Background: Neck pain is a common illness that could affect individual's daily activities. Class IV laser with longer wavelength can stimulate tissues and penetrate more than the classic low-level laser therapy. Objectives: The aim of the study was to investigate the efficacy of class IV diode laser in the treatment of patients with chronic neck pain (CNP). Methods: Fifty-two patients participated and completed the study. Their mean age (SD) was 50.7 (6.2). Patients were randomized into two groups and treated with laser plus exercise (laser + EX) group and placebo laser plus exercise (PL+EX) group. Treatment was performed by Class IV laser in two phases; scanning and trigger point phases. Scanning to the posterior neck and shoulder girdle region with 4 J/cm<sup>2</sup> with a total energy of 300 J applied to 75 cm<sup>2</sup> in 4 minutes and 16 seconds. Eight trigger points on the posterior neck area were treated by 4 J/cm<sup>2</sup> and the time of application was in 30 seconds. Both groups received exercise two times per week for 4 weeks. Exercises included range of motion, isometric, stretching, isotonic resisted exercises to the cervical extensors, lateral bending and rotators muscles with postural correction exercises. The measured variables were pain level using visual analogue scale (VAS), and neck functional activity using neck disability index (NDI) score. Measurements were taken at baseline and after 4 weeks of treatment. The level of statistical significance was set as  $p < 0.05$ . Results: There were significant decreases in post-treatment VAS and NDI in both groups as compared to baseline values. Laser + EX effectively decreased VAS (mean difference -6.5,  $p = 0.01$ ) and NDI scores after (mean difference -41.3,  $p = 0.01$ ) 4 weeks of treatment compared to PL + EX. Conclusion: Class IV laser combined with exercise is effective treatment for patients with CNP as compared to PL + EX therapy. The combination of laser + EX effectively increased functional activity and reduced pain after 4 weeks of treatment.

**Keywords :** chronic neck pain, class IV laser, exercises, neck disability index, visual analogue scale

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