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The efficacy of low level laser therapy on musculoskeletal impairments of the shoulder: A systematic review and meta-analysis

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Low-level laser therapy (LLLT) is a form of light therapy is used as a therapeutic modality. Many studies have examined the effectiveness of LLLT in treating patients with musculoskeletal impairments of the shoulder such as pain, decreased range of motion (ROM), and decreased strength. Some studies conclude that LLLT is effective in decreasing these impairments, while others indicate that LLLT has no effect. Therefore, the present systematic review and meta-analysis explores the most current evidence on LLLT and musculoskeletal pathologies of the shoulder in order to determine the effectiveness of this modality and to establish the best dosage parameters and methods of application. A literature search of databases was performed and 9 eligible randomized controlled studies (RCT's) met the criteria for analysis. The effectiveness of the studies was determined using outcome measures which included pain, ROM, strength and functional assessment questionnaires.

A meta-analysis was performed to determine the weighted effect sizes for each relevant outcome measure. For the purpose of this systematic review and meta-analysis, the authors found some degree of improvement for pain and overhead ROM. There is less evidence of similar improvement for internal and external rotation range of motion and function. However, statistical significance ($p \leq 0.05$) was found only for pain and ROM in flexion/abduction. For dosage parameters, a wavelength of 820 nm which falls within the guidelines given by World Association of Laser Therapy (WALT) for the Gallium Aluminum (GaAlAs) laser, was found to have consistent positive results in reducing musculoskeletal impairments of the shoulder.

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