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EVALUATION OF LOW-LEVEL LASER THERAPY AT 635nm FOR THE TREATMENT OF ACUTE AND CHRONIC NECK AND SHOULDER PAIN: A PLACEBO-CONTROLLED, RANDOMIZED STUDY

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Background: Upper extremity chronic pain is a dynamic condition with a multifactorial etiology and a poorly understood pathogenic mechanism. The most prevalent form of upper extremity pain is chronic shoulder and neck pain (cSNP), which affects 10-36% of the population at some point. Low-level laser therapy (LLLT) has demonstrated preliminary utility for the treatment of acute and chronic pain. Herein, we evaluated the efficacy of LLLT delivering a wavelength at 635 nm with an output intensity of 1.0 mW for the relief of cSNP.

Study: Eighty-six subjects qualified and were enrolled in a placebo-controlled, randomized, double-blind, multi-center study. Degree of Pain rating was recorded using the VAS with O representing "no pain" and 100 representing "worst pain imaginable." Linear range of motion (ROM) was performed to assess patient mobility in the neck-should region using a universal inclinometer. Participants were evaluated across four time points: pre-procedure, immediately post-procedure, and at 24 and 48 hours post-procedure. An individual patient success criterion was defined as a 30% improvement in Degree of Pain rating on the VAS across the two measurement periods.

Results: Of the 43 participating test patients, 28 (65.1%) met the individual success criteria with 11.6% of placebo subjects satisfying the criteria, a difference of 53.5% in the proportion of individual participants meeting the success criteria between test and sham groups. Test group participants reported a reduction of -29.02 for immediate post-procedure Degree of Pain ratings on the VAS ($P<0.0001$), compared with a 4.91 reduction on the VAS for control subjects. ($P>0.05$). Test group participants demonstrated a significant improvement in linear range of motion for the right and left sides of the neck and right and left sides of the shoulder.

Conclusion: These data demonstrate the clinical utility of LLLT at 635 nm for the treatment of cSNP.