

PROTOCOLOS DE INVESTIGACIÓN - ODONTOLOGÍA

**EFFECTS OF PHOTOBIOMODULATION WITH SUPERPULSED LASER AND
DUAL WAVELENGTHS (810 + 980 NM) IN CHILDREN AND ADOLESCENTS
WITH FACIAL MUSCLE PAIN AND HEADACHE: PROTOCOL FOR A
RANDOMIZED CONTROLLED CLINICAL TRIAL**

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Orofacial pain and tension-type headache are common in children and adolescents, potentially negatively impacting school performance, social

interactions, and functional development. As pharmacological therapies can cause adverse effects and systemic overload, non-pharmacological alternatives, such as photobiomodulation (PBM) with a diode laser applied locally for pain control, have been explored. This protocol aims to evaluate the effects of PBM with a superpulsed dual-wavelength diode laser (810 nm + 980 nm) on facial muscle pain and tension-type headache in children and adolescents, also considering anthropometric variables. Sixty participants will be included and divided into two groups: G1 (intervention), which will receive PBM on the masseter and temporal muscles in eight sessions; and G2 (control), which will undergo the same protocol with the equipment turned off (sham). The following variables will be collected before the intervention: age, phototype (Fitzpatrick scale), weight, height, and BMI. Penetrated energy will be quantified with a power meter, and local temperature will be measured with a dual infrared laser thermometer. Pain will be assessed using the Faces Pain Scale and the International Classification of Headache Disorders (ICHD-3) questionnaire.

Primary outcomes include the reduction of orofacial pain and tension-type headache. Secondary outcomes encompass the correlation between anthropometric variables, penetrated energy, and clinical response to PBM. Statistical analysis will include descriptive statistics and a linear mixed model with repeated measures (group, time, and adjusting covariates), with a significance level of 5% ($p < 0.05$) and Bonferroni-corrected post-hoc tests. Analyses will be performed using SPSS (v.28.0).

Palavras-chave: orofacial pain; pediatric; photobiomodulation.