Photobiomodulation applied to the treatment of spasticity in children diagnosed with spastic infantile cerebral palsy.

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Cerebral palsy syndrome implies permanent movement and posture disorders in childhood. Its etiology is related to an insult or damage to the central nervous system during the prenatal, perinatal, or postnatal period when the central nervous system has not yet fully developed. Approximately 80% of all individuals with cerebral palsy will be spastic, and this spasticity, untreated for a long time, generates anatomical and structural changes in bones, joints, muscles, tendons, and nerve junctions, with an impact on the quality of life, social participation, and physical function of this individual. Photobiomodulation therapy (PBM) has biological effects of tissue regeneration, reduction of the inflammatory process, and relief of pain symptoms, in addition to being feasible, safe, painless, and non-invasive. Objectives and methods: This study is a double-blinded, randomized, controlled clinical trial to evaluate the effect of photobiomodulation in reducing gastrocnemius muscle spasticity in 20 children aged between 2 and 18 years, diagnosed with lower limb spastic cerebral palsy from any etiology at least 03 months, selected at the Rehabilitation Service of the Universidade Nove de Julho Campus Vila

Maria and randomized at two groups: the application of Low Level Laser Therapy in the medial and lateral right gastrocnemius muscles (device power of 100mW, wavelength of 785nm, energy of 1J/cm(2)/point, applied in 04 points per muscle, during 40 seconds, three times a week for 12 sessions) or placebo Low-level Laser Therapy group (the same device turned off). Patients with fixed anatomic ankle deformity, malnutrition, severe gastroesophageal reflux disease and other kind of movement disorder will be excluded. Both groups will also receive the standard treatment for spasticity delivered by the rehabilitation health team of hospital. To assess the response to therapy, the primary outcomes will be evaluated by the modified Ashworth Scale, the Functional Independence Measure (WeeFIM) for children, the Visual Analogue Scale (VAS) for pain and passive and active ankle range of movement analyzed before and after the therapeutic session. The data will be statistically analyzed and the results reported and discussed. This study is in accordance with the research ethics guidelines of the University's Research Ethics Committee.

Keywords: Cerebral palsy, Spasticity, Photobiomodulation, PBM, Low power laser therapy, LLLT

Biography: Dr Ariane Cristina Zöll is a Physician graduated in Medicine from Faculdades Integradas Padre Albino, previously Faculty of Medicine of Catanduva in 2011, with a medical Specialization in General Surgery at Hospital Ipiranga in the City of São Paulo in 2015 and a subspecialization in Pediatric Surgery at Hospital Geral de Itapecerica da Serra in 2019, currently studying for a PhD in Biophotonics Applied to Health Sciences at Universidade Nove de Julho in São Paulo. She has experience in the area of Pre-Hospital Care as she worked in the SAMU 192 emergency care service in the City of Osasco from 2012 to 2013 and from 2016 to 2018.