

Thermography Evaluation on Facial Temperature Recovery after Elastic Gum

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Abstract : Thermography is a non-radiating and contact-free technology which can be used to monitor skin temperature. The efficiency and safety of thermography technology make it a useful tool for detecting and locating thermal changes in skin surface, characterized by increases or decreases in temperature. This work intends to be a contribution for the use of thermography as a methodology for evaluation of skin temperature in the context of orofacial biomechanics. The study aims to identify the oscillations of skin temperature in the left and right hemiface regions of the masseter muscle, during and after thermal stimulus, and estimate the time required to restore the initial temperature after the application of the stimulus. Using a FLIR T430sc camera, a data acquisition protocol was followed with a group of eight volunteers, aged between 22 and 27 years. The tests were performed in a controlled environment with the volunteers in a comfortably static position. The thermal stimulus involves the use of an ice volume with controlled size and contact surface. The skin surface temperature was recorded in two distinct situations, namely without further stimulus and with the additions of a stimulus obtained by a chewing gum. The data obtained were treated using FLIR Research IR Max software. The time required to recover the initial temperature ranged from 20 to 52 minutes when no stimulus was added and varied between 8 and 26 minutes with the chewing gum stimulus. These results show that recovery is faster with the addition of the stimulus and may guide clinicians regarding the pre and post-operative times with ice therapy, in the presence or absence of mechanical stimulus that increases muscle functions (e.g. phonetics or mastication).

Keywords : thermography, orofacial biomechanics, skin temperature, ice therapy

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