

# Behavior Analysis of Electromyographic Activity of the Masseter Muscle in Sleep Bruxers

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**BACKGROUND:** The electromyography (EMG) has been broadly used as an auxiliary method in the diagnosis of the functional response of the masticatory muscles [1,2]. The revision of the literature shows that a high EMG activity of the masseter muscle is observed in dysfunctions such as Bruxism. The purpose of this study was to examine the effect of an occlusal splint on masticatory muscle activities in sleep bruxers subjects. Sleep Bruxism usually identified as a parafunction can be defined as unconscious and non-functional activities of the masticatory system muscles.

**METHODS:** Ten sleep-bruxer subjects with a mean age of 25 + 5 years participated in this study. Não entendi a seguinte sentença (escreva em português e me passe): The EMG activities of the masseter muscle at both sides were recorded after the use of the occlusal splint in the end of day work activities in the same day without an occlusal splint. The EMG activity was captured by an **EMG System do Brasil Ltda** composed of differential double electrode, bandpass filter at 20 to 1000 Hz, and a subsequent amplification of 50 times with a common mode rejection ratio of 120 dB. The data was sent to a 14-bit A/D converter and sampled at 2000 Hz. A differential double electrode was used, with pré-amplification with 100 times pre-amplification, 25 mm<sup>2</sup> contact area and contacts 10 mm apart. Sampling frequency was 2000 Hz. The recommendations from the International Society of Electrophysiology and Kinesiology (ISEK) regarding electromyography's applications were followed here. The results were analysed using independent t-test ( $p < 0.05$ ).

The electrodes were positioned bilaterally on the masseter muscles. All procedures related to the EMG data followed the recommendations of the International Society of Electrophysiology and Kinesiology (ISEK). The EMG data was analyzed by means of their linear envelopes, obtained after full-wave rectification and low-pass filtering with a 4th order and zero-lag Butterworth filter at 5Hz. The amplitude of each EMG signal was normalized by the mean valued of the signal. The EMG data were also normalized in time with all data having the same normalized duration. The variability of the intensity of the EMG signal was calculated through the coefficient of variability (CV). The comparison among the signals of EMG of the different studied muscles was made through the t-test for paired samples, and the level of significance adopted was 0.05. **RESULT ALL:** In both muscles the maximal EMG activity decreased significantly by wearing the appliance using

the splint during in the night when compared with levels muscle activity in the end of day. **CONCLUSION:** These findings suggest that nocturnal masticatory muscle activity is significantly reduced by wearing an occlusal splint and that the use of such an appliance at night could help to relax masticatory muscles. REFERENCES:

[1] De Luca, C.J. A use of Surface Electromyography in biomechanics. J. Appl. Biomech, Champaign, V.13, p.135-263, 1997.

[2] Basmajian, J.V., De Luca, C.J. Muscle alive: their functions revealed by electromyography. 5 th Ed. Baltimore: Willian & Willians, 1985