

# Wireless EMG Recordings of Daytime Bruxism: Differentiating Clenching from Swallowing

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## AIM OF INVESTIGATION

Bruxism is considered a potential etiologic factor for temporomandibular disorders. While the study and recording techniques for sleep bruxism have dramatically evolved during the last two decades, the validation of recording methods for daytime bruxism is still a challenge to researchers. One of the main difficulties remains the differentiation of clenching events from functional activities as well as the use of wired EMG systems. The present pilot study aimed to differentiate experimental diurnal clenching events from swallowing with a novel experimental setting using wireless technology.

## METHODS

A wireless surface EMG recording system (Trigno®) was used to evaluate diurnal muscle activity in the masseter and temporalis muscles. The EMG signal amplitude was normalized according to the maximum voluntary contraction. A standardized experimental setting was developed in order to simulate daytime bruxism events according to established criteria (Fig.1). Three healthy volunteers participated and 180 events of clenching and functional swallowing activity were measured bilaterally and analyzed. Analysis of variance (ANOVA) was used to evaluate possible differences between groups.

## RESULTS

The wireless system was capable to accurately record EMG activity. Differentiation and measurement of clenching vs. swallowing events was possible using this experimental setting. There was a statistically significant difference between groups ( $p < 0.001$ ) (Fig.2).

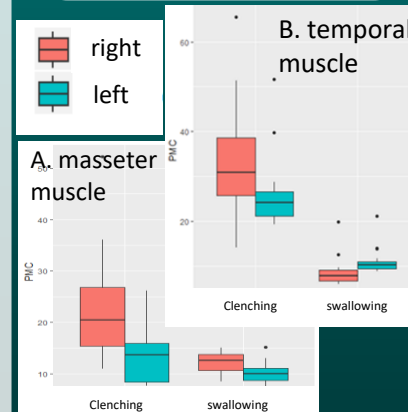


Fig. 1 Distribution of the Percentage of Maximum Contraction (PMC) according to group and side (A. masseter and B. temporal muscles).

## CONCLUSIONS

Using the present experimental setting it was possible to differentiate between specific nonfunctional and functional daytime activity. These preliminary results encourage further developments and comparisons with other functional activities and the implementation of larger research in the area of daytime bruxism.

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