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Brain and jaw muscle motor response to guided music listening

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Objectives. Wake-time clenching and mood disorders, such as anxiety, contribute to temporomandibular disorders (TMD), the most common cause of chronic orofacial pain. Guided music listening (GML), a music intervention which modulates mood and attention, has been shown to reduce pain in patients suffering from chronic musculoskeletal conditions. Nonetheless, whether GML is able to modulate the activity of masticatory muscles is minimally known. This study aimed to evaluate the effect of GML on the EEG electroencephalographic response and electromyographic (EMG) activity of the masseter in healthy volunteers.

Methods. Female participants (age range 18-65 years) were recruited at the University of Toronto. The EMG activity of the right masseter muscle was recorded during three pre-selected music tasks (stress, relaxing and favorite) and one control task no-music task for 15 minutes each. EMG episodes greater than 10% of the maximum voluntary contraction were considered parafunctional activity periods and were assessed. The Muse EEG headband by *InteraXon* was used to assess alpha and gamma brain waves associated with stress and concentration levels.

Results. Significant differences in the EMG amplitude of the wake-time clenching episodes were found between the different music tasks ($p < 0.05$). Specific patterns of EEG responses were also found, with significant interindividual variability.

Conclusion. Music is able to modulate the activity of masticatory muscles and create distinct patterns of EEG response in healthy individuals. With further research, GML may be used as a multimodal approach for chronic orofacial pain due to TMD.