

## **Genioglossi muscle activity in response to changes in anterior/neutral head posture.**

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Clinicians have acknowledged swallowing, tongue activity, and head posture as interdependent variables that must be concurrently examined. The purpose of this study was to evaluate genioglossus activity during swallowing, rest, and maximal tongue protrusion in two head positions (HPs) with a noninvasive recording device. Eight Angle Class I subjects were evaluated. Repeated measures were performed in a single session to record surface intraoral electromyographic (EMG) activity of the genioglossus muscles. Head position was measured in angular degrees from photographs. Three variables were measured in both the neutral-head position (NHP) and anterior-head position (AHP): (1) duration of genioglossus EMG during swallowing, (2) genioglossus EMG with the tongue at rest, and (3) genioglossus EMG during maximal isometric tongue protrusion. A Wilcoxin matched-pair signed-rank statistic was used for EMG analysis, and a paired sample t test statistic was used for head posture analysis. The angles measured for NHP and AHP within each subject were significantly different verifying two different head positions. Duration of swallowing was not significantly different between head positions. Resting genioglossus EMG and maximal isometric genioglossus EMG were statistically greater in the AHP. The data suggest that head positional changes may have an effect on genioglossus muscle activation thresholds. However, small differences in resting EMG activity between head positions suggests that the clinical significance needs further investigation.

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