

Mandibular Advancement Modulates Respiratory-Related Genioglossus Electromyographic Activity.

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The purpose of this study was to determine if mandibular advancement had any effects on the respiratory-related electromyographic (EMG) activity of the genioglossus (GG) muscle in normal adults for both the upright and supine positions. Spontaneous GG EMG activity during quiet nasal breathing was recorded in 5 mandibular positions: centric occlusion (CO), maximal protrusion (MAX), 25% (MAX25), 50% (MAX50), and 75% (MAX75) of MAX. The maximal GG EMG activities during inspiration (GGinsp) and minimal GG EMG activities during expiration (GGexp) were compared. The GGinsp and GGexp significantly increased with mandibular advancement in both body positions. Furthermore, there were significant differences in both GGinsp and GGexp between CO and more protruded mandibular positions. However, no significant differences were found in the GGinsp at MAX compared to that at MAX75, and in the GGexp at MAX compared to those at MAX75 and MAX50. These results suggest that augmentation of the respiratory-related GG EMG activity with mandibular advancement diminishes the propensity of the upper airway to collapse. Moreover, the lack of any remarkable difference between the GGinsp at MAX75 and that at MAX may be relevant to the effectiveness of oral appliances in the treatment of obstructive sleep apnea.