

[Am Rev Respir Dis](#). 1993 Nov;148(5):1341-5. [Links](#)

Effect of posture and breathing route on genioglossal electromyogram activity in normal subjects and in patients with the sleep apnea/hypopnea syndrome.

Douglas NJ, Jan MA, Yildirim N, Warren PM, Drummond GB.

Department of Medicine (RIE), City Hospital, Edinburgh, Scotland, UK.

Patients with the sleep apnea/hypopnea syndrome (SAHS) often have more apneas supine than sitting. We have shown radiologically that although the retropalatal airway narrows on lying down, the retroglossal airway widens. We have thus investigated the effect of posture on genioglossal EMG activity in 10 normal subjects and 10 patients with SAHS (58 +/- 29 SD apneas + hypopneas/h) using peroral intramuscular EMG electrodes. Data were analyzed by three-way analysis of variance, with diagnosis, posture, and route as factors. Peak inspiratory and tonic expiratory genioglossal EMG were both higher than sitting, with no significant difference between normal subjects and SAHS higher ($p < 0.001$) supine patients, although there was a trend ($p < 0.09$) toward the supine posture having a greater effect on peak inspiratory EMG in the SAHS patients. There was no significant effect of breathing route on either peak inspiratory ($p > 0.9$) or tonic expiratory ($p > 0.8$) genioglossal EMG, but there were significant differences between the groups ($p < 0.01$), the SAHS patients having higher and the normal subjects lower EMG tone with nasal in comparison with oral breathing on both inspiration and expiration. This study therefore shows that both body posture and breathing route are important determinants of genioglossal EMG tone.