

## Effects of neck flexion and mouth opening on inspiratory flow dynamics in awake humans.

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Phrenic nerve stimulation (PNS) can assess airflow dynamics of the upper airway (UA) during wakefulness in man. Using PNS, we aimed to assess the impact of neck flexion and mouth opening in promoting UA unstability. Measurements were made during nasal breathing in seven healthy subjects (ages = 23-39 yr; one woman). Surface diaphragm electromyogram, esophageal pressure referenced to mask pressure, and flow were recorded during diaphragm twitches with neck in neutral position and mouth closed and then with neck flexion and/or mouth opening. Twitches always exhibited a flow-limited pattern. Flow-limiting driving pressure (Pd) and peak Pd were increased by neck flexion ( $P < 0.01$ ) without significant change in the corresponding flows. UA resistances at these flow values were higher with the neck flexed ( $P < 0.05$ ). Mouth opening alone did not exert any significant influence. We conclude that the position of the neck has a discernible impact on the flow behavior through the nonphasically active UA faced with a negative Pd.

PMID: 11744646 [PubMed - indexed for MEDLINE]