

Abstract Submitted
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Effect of pneumotach on measurement of vocal function¹ GAGE WALTERS, MICHAEL MCPHAIL, MICHAEL KRANE, Penn State University — Aerodynamic and acoustic measurements of vocal function were performed in a physical model of the human airway with and without a pneumotach (Rothenberg mask), used by clinicians to measure vocal volume flow. The purpose of these experiments was to assess whether the device alters acoustic and aerodynamic conditions sufficiently to change phonation behavior. The airway model, which mimics acoustic behavior of an adult human airway from trachea to mouth, consists of a 31.5cm long straight duct with a 2.54cm square cross section. Model vocal folds comprised of molded silicone rubber were set into vibration by introducing airflow from a compressed air source. Measurements included transglottal pressure difference, mean volume flow, vocal fold vibratory motion, and sound pressure measured at the mouth. The experiments show that while the pneumotach imparted measurable aerodynamic and acoustic loads on the system, measurement of mean glottal resistance was not affected. Acoustic pressure levels were attenuated, however, suggesting clinical acoustic measurements of vocal function need correction when performed in conjunction with a pneumotach

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