

Abstract Submitted
for the DFD16 Meeting of
The American Physical Society

Does a pneumotach accurately characterize voice function? GAGE WALTERS, MICHAEL KRANE, Penn State University — A study is presented which addresses how a pneumotach might adversely affect clinical measurements of voice function. A pneumotach is a device, typically a mask, worn over the mouth, in order to measure time-varying glottal volume flow. By measuring the time-varying difference in pressure across a known aerodynamic resistance element in the mask, the glottal volume flow waveform is estimated. Because it adds aerodynamic resistance to the vocal system, there is some concern that using a pneumotach may not accurately portray the behavior of the voice. To test this hypothesis, experiments were performed in a simplified airway model with the principal dimensions of an adult human upper airway. A compliant constriction, fabricated from silicone rubber, modeled the vocal folds. Variations of transglottal pressure, time-averaged volume flow, model vocal fold vibration amplitude, and radiated sound with subglottal pressure were performed, with and without the pneumotach in place, and differences noted. (Acknowledge support of NIH grant 2R01DC005642-10A1.)

Michael Krane
Penn State University

Date submitted: 02 Aug 2016

Electronic form version 1.4