

Abstract Submitted  
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**Scaled-up in vitro experiments of vocal fold paralysis**<sup>1</sup> KEITH PETERSON, TIMOTHY WEI, RPI, MICHAEL KRANE, Penn State - ARL — Vocal fold paralysis is the inability of either one, or both vocal folds to open and close properly. Digital Particle Image Velocimetry (DPIV) measurements were taken to further understand the consequences paralyzed vocal folds have on the fluid dynamics downstream of the vocal folds during human phonation. The experiments were taken in a free-stream water tunnel using a simplified scaled-up model of human vocal folds. The Reynolds and Strouhal numbers ranged from 4500 to 10000, and 0.01 to 0.04, respectively. Various configuration setups were tested to emulate several types of vocal fold paralyses. These configurations include unilateral vocal fold immobility (UVFI), bilateral vocal fold immobility (BVFI) and the vocal folds operating at different oscillating frequencies. Data from these different conditions will be compared with an eye toward understanding the critical dynamics associated with this class of disease.

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