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**On the influence of vocal fold collision on phonation**

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For laryngoscopic observations show that the closed time of the glottis is significantly long, especially for low-frequency vocal fold vibrations in the vocal fry and chest register. Vocal fold contact appears to be a major part of the phonatory cycle and may play an important role for self-sustained vocal fold oscillations. Using a 2D, finite element, self-oscillating model of the coupled vocal fold-glottal flow system, we studied the influence of the mechanical impact on phonation onset mechanisms and vocal fold vibratory behavior. The air flow was assumed to be laminar and the compressible Navier-Stokes equations were solved for the flow domain.

For fixed values of the Young's modulus of the vocal fold we found that vocal fold contact significantly increased the vibration frequency as compared to the case of no contact. The changed total pressure forces on the vocal fold in medial-lateral (lift force) and inferior-superior (drag force) directions resulted in different phonation threshold pressure values and vocal fold vibration patterns. The increase in phonation frequency due to contact will be discussed based on the theory of impact oscillators.