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**Theoretical and experimental results of phonation threshold
pressure vs. oscillation frequency of the vocal folds**

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The dynamical principles of the vocal fold oscillation at phonation were set forth by Titze (I. R. Titze, J. Acoust. Soc. Am. **83**, 1536-1552, 1988), by representing motion of the tissues as a surface wave propagating in the direction of the airflow. An important result of his work was an equation for the phonation threshold value of lung pressure, defined as the minimum value required to initiate the vocal fold oscillation. Titze's model assumed a small time delay for the mucosal wave to travel along the vocal folds, with the consequence that the phonation threshold pressure results independent of the oscillation frequency. Here, we consider an extension of his model for an arbitrary time delay. Our results show that the threshold pressure increases with oscillation frequency following a $x/\sin(x)$ law. We investigate the validity of the theoretical equation by comparing it with pressure measures from a mechanical replica of the vocal folds, under various configurations. In general, the equation shows good agreement with the experimental data, and may find applications for building empirical relations of glottal aerodynamics, and for clinical studies of phonation. [Work supported by CAPES-Brazil]