Using high-speed nasopharyngoscopy to study velum dynamics during normal speech

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Abstract
The normal patterns of velar movement speed and elevation patterns during different speech sounds has not been well-studied for clinical purposes. High-speed nasopharyngoscopy taken simultaneously with audio recording is used as an alternative technique to track the motion of the velum, its temporal and spatial characteristics, and reaction times in healthy adult speakers. Results show that transvelar vibrations occur for voiced sounds at the fundamental frequency (i.e., pitch) of the subject. The elevation of the velum is higher for high vowels and its response time varied based on speech sounds. Incomplete closure of the velum was observed for nasal /consonant-a/ sounds.