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Starting vortex behavior in flow through a time-varying rectangular slit MICHAEL BARRY, Sunset Preparatory School, MICHAEL KRANE, Penn State University, TIMOTHY WEI, Rensselaer Polytechnic Institute — The behavior of the starting vortex issuing from a time-varying rectangular slit with an imposed pressure gradient, representing the flow through the human glottis, is presented. The range of reduced frequency of vibration was 0.01-0.04 and the Reynolds number 8000. DPIV measurements of the velocity field on the plane of symmetry show that the starting vortex formation takes a longer fraction of the vibration period as the reduced frequency increases. The formation time and strength of the starting vortex are estimated from the velocity field measurements. In addition, the volume flow measurements allow the stroke ratio L/D to be estimated. The correlation L/D and pinch-off is also discussed.

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