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Mathematical modeling of normal and abnormal responses to the Valsalva maneuver

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The human papillomavirus (HPV) vaccine has been in prevalent use for the last decade. Though many individuals have no issues with the vaccine, some HPV-vaccinated patients suffer from side effects, such as fibromyalgia and postural orthostatic tachycardia syndrome (POTS). Many of these side effects share common symptoms, such as dizziness, widespread pain, and syncope, classified as functional somatic syndromes (FSS). We currently do not understand what causes FSS. We use mathematical modeling with healthy and POTS data to create simple cardiovascular and neurological models that mimic various responses to the Valsalva maneuver. This presentation will elucidate our recent results and their physiological repercussions.