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## Discussion

**Dr Vivek Rao** *(Toronto, Canada)*. You mentioned at the outset that this is a physiologic controller system, but it seems to me you are still setting your speed and algorithms for inducing pulse. Does your controller allow you to modify it on the basis of the native heart rate? If your patient is exercising and the native heart rate increases, will this controller automatically change your ventricular assist device setting?

**Dr Asgari.** Yes, the system is synchronized with ECG that is measured from ECG sensors, so the LVAD will respond to increases in heart rate associated with day-to-day physiologic stresses, such as exercise, climbing stairs, or Valsalva maneuver. The decreases in heart rate associated with diurnal variation (eg, sleeping or resting) will be detected, and the LVAD will respond accordingly. One can define different percentages of systole and diastole and automatically vary their duration on the basis of the heart rate. The controller can run the LVAD in a co-pulsation, counterpulsation, or fixed mode of operation. This way, it is truly a pump that responds to physiologic demands.