We claim:

1. A method for providing information regarding the vascular performance of a patient, the method comprising:

providing a pump, the pump being configured to operate at an adjustable pump speed;

pumping the pump at a first pump speed;

monitoring a hemodynamic parameter during pumping at the first pump speed;

identifying a first phase of a first heartbeat of the heart over a first period of time;

predicting a second phase of a second heartbeat of the heart over a second period of time based on the monitored hemodynamic parameter;

changing the pump speed to a second pump speed during the second phase of the second heartbeat;

monitoring the hemodynamic parameter during the second phase;

comparing the monitored hemodynamic parameter during the first phase to the monitored hemodynamic parameter during the second phase to calculate a change in the hemodynamic parameter between the first phase and the second phase; and

computing, based on the change in the hemodynamic parameter between the first phase and the second phase, a metric indicative of vascular performance.

2. The method of claim 1, further comprising changing the second pump speed to the first pump speed after the second phase.

3. The method of claim 2, wherein the hemodynamic parameter is aortic pressure.

4 . The method of claim 3, wherein the first phase is one of a first period that is one of a systolic period and a diastolic period, and the second phase is a second period that is one of a different systolic period and a different diastolic period.

5. The method of claim 4, wherein the first phase is a first diastolic period and the second phase is a second, different, diastolic period.

6. The method of claim 4, wherein the first phase is a first systolic period and the second phase is a second different systolic period.

7. The method of claim 1, wherein identifying the first phase of the first heartbeat is based on variation in the monitored hemodynamic parameter over time while pumping at the first pump speed.

8. The method of any of claim 7, wherein predicting the second phase of the second heartbeat of the heart is based on the identified first phase of the heartbeat cycle.

9. The method of any of claim 1, wherein comparing the hemodynamic parameter during the first phase to the second phase comprises:

calculating a first blood volume pumped by the heart during the first phase;

calculating a second blood volume pumped by the heart during the second phase; and

determining a numerical difference between the first blood volume and the second blood volume.

10. The method of claim 8, the method further comprising assessing linearity of the change in the hemodynamic parameter between the first phase and the second phase over time.

11. The method of claim 10, wherein determining cardiac performance of the heart is determined by:

calculating, based on the change in the hemodynamic parameter between the first phase and the second phase, vascular compliance and vascular resistance of the systemic vasculature; and

calculating, using a Windkessel model, cardiac output of the heart.

12. The method of claim 11, wherein changing the first pump speed to a second pump speed comprises increasing the pump speed.