Activity: Studying the Effect of Flow Tube Radius on Fluid Flow

What happened to fluid flow as the radius of the flow tube was increased?

Explain how our blood vessels alter blood flow.

Activity: Studying the Effect of Viscosity on Fluid Flow

How does fluid flow change as viscosity is modified?

How does the effect of viscosity compare with the effect of radius on fluid flow?

Predict the effect of anemia on blood flow.

What might happen to blood flow if we increased the number of blood cells?

Explain why changing blood viscosity would or would not be a reasonable method for the body to control blood flow.

Activity: Studying the Effect of Flow Tube Length on Fluid Flow

How does the flow tube length affect fluid flow?

Explain why altering blood vessel length would or would not be a good way to control blood flow in the body.
**Activity: Studying the Effect of Pressure on Fluid Flow**

How does driving pressure affect fluid flow?

How does this plot differ from the others so far?

**Activity: Studying the Effect of Radius on Pump Activity**

Explain why this graph differs from the radius plot in the Vessel Resistance experiment.

What do you think would happen to the flow rate and the pump rate if the left flow tube radius is changed (either increased or decreased)?

**Activity: Studying the Effect of Stroke Volume on Pump Activity**

What happened to the pump’s rate as its stroke volume was increased?

Explain why an athlete’s resting heart rate might be lower than that of the average person’s.

What would be the effect of increasing the stroke volume on cardiac output (at any given rate)?

What do you think might happen to the pressure in the pump during filling if the valve in the right flow tube became leaky?

What might occur in the left heart and pulmonary blood vessels if the aortic valve became leaky?
What might occur if the aortic valve became slightly constricted?

**Activity: Studying Combined Effects**

How is the flow rate affected when the right flow tube radius is kept constant (at 3.0 mm) and the left flow tube radius is modified?

How does decreasing the left flow tube radius affect the pump chamber filling time?

What happens to the flow and pump rate when you keep the end volume constant and alter the start volume to manipulate stroke volume?

How does changing the left beaker pressure affect the flow rate?

If the left beaker pressure is decreased to 10 mm Hg, how is pump-filling affected?

What happens to the pump rate if the filling time is shortened?

What happens to fluid flow when the right beaker pressure equals the pump pressure?

**Activity: Studying Compensation**

How does the flow rate compare with “normal”?

How were you able to return flow to “normal”?
Explain how the human heart might compensate for partial blockage of the arterial valve or increased resistance in the arterial system?

To increase blood flow to a particular body system, would it be better to adjust heart rate or blood vessel diameter, Explain?