

PhysioEx Lab Report

Exercise 5: Cardiovascular Dynamics

Activity 4: Studying the Effect of Blood Pressure on Blood Flow Rate

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Session ID: session-322a5889-a7c4-9ae0-faf2-4bf5bb9b69a6

Pre-lab Quiz Results

You scored 100% by answering 4 out of 4 questions correctly.

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X

X

1 Pressure changes in the cardiovascular system primarily result from

You correctly answered: changes in the force of contraction of the heart.

2 What is the driving force for blood flow?

You correctly answered: pressure gradient.

3 Which of the following is directly proportional to blood flow?

You correctly answered: blood vessel radius and pressure gradient.

4 Arteries close to the heart need to be able to compensate for

You correctly answered: pressure changes.

Experiment Results

Predict Questions

1 Predict Question 1: What effect do you think increasing the pressure will have on the fluid flow rate?

Your answer: The fluid flow rate will increase.

2 Predict Question 2: Do you think a graph plotted with pressure on the X-axis and flow rate on the Y-axis will be linear (a straight line)?

Your answer: yes.

Stop & Think Question

1 This experiment uses pressure changes to model

You correctly answered: changes in the force of contraction of the heart.

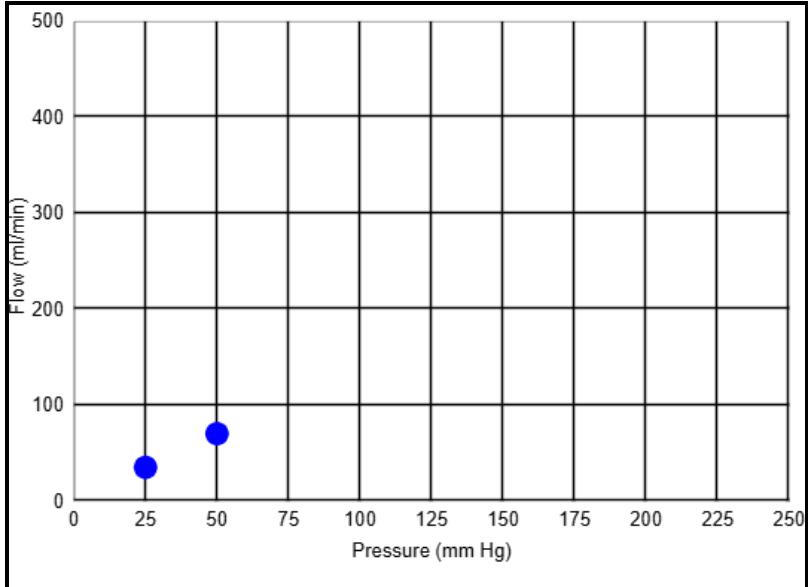
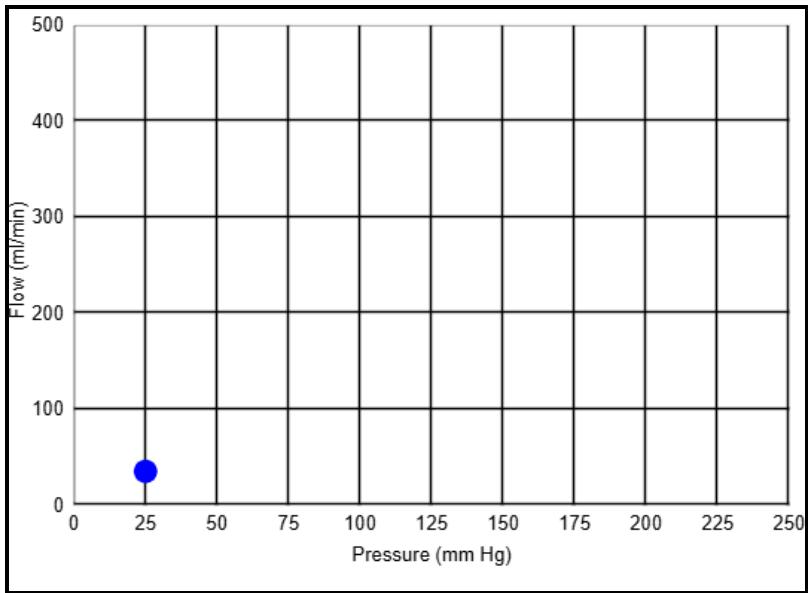
Experiment Data

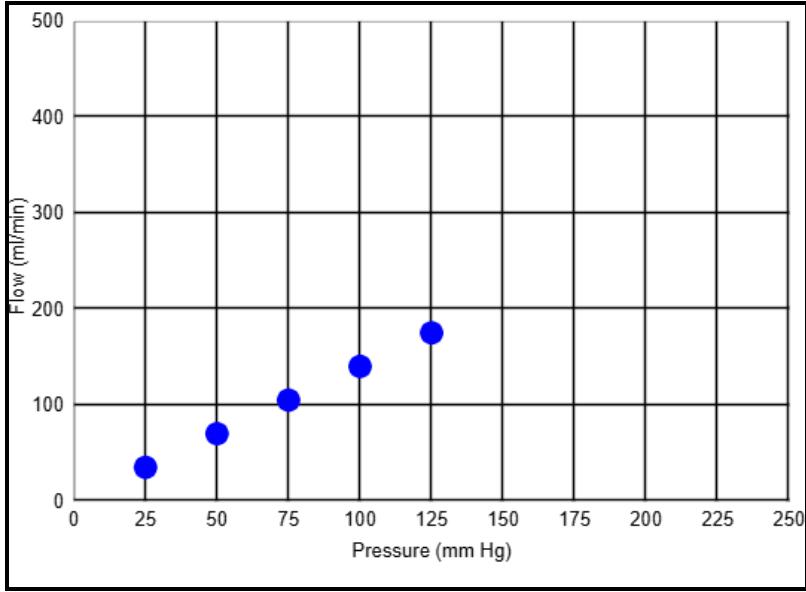
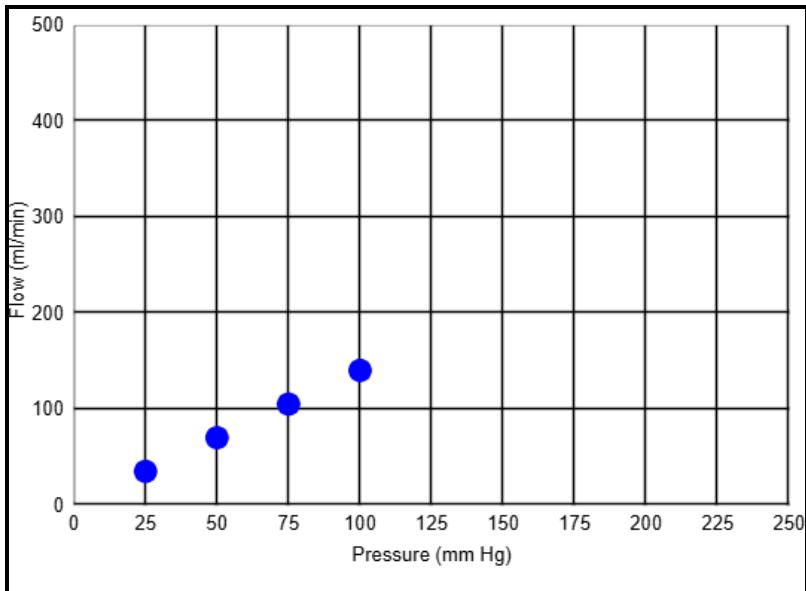
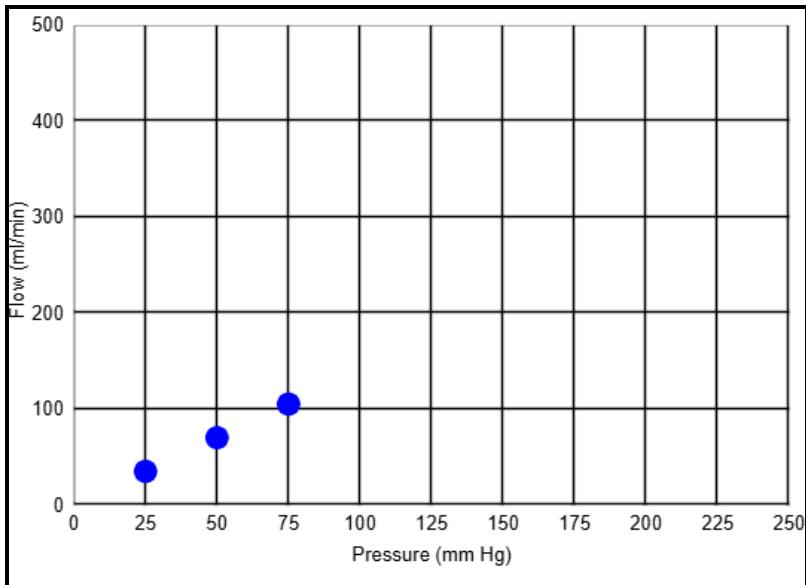
Flow (ml/min)	Radius (mm)	Viscosity	Length (mm)	Pressure (mm Hg)
35.0	5.0	3.5	50	25
70.1	5.0	3.5	50	50
105.1	5.0	3.5	50	75
140.2	5.0	3.5	50	100
175.2	5.0	3.5	50	125
210.3	5.0	3.5	50	150
245.3	5.0	3.5	50	175
280.4	5.0	3.5	50	200

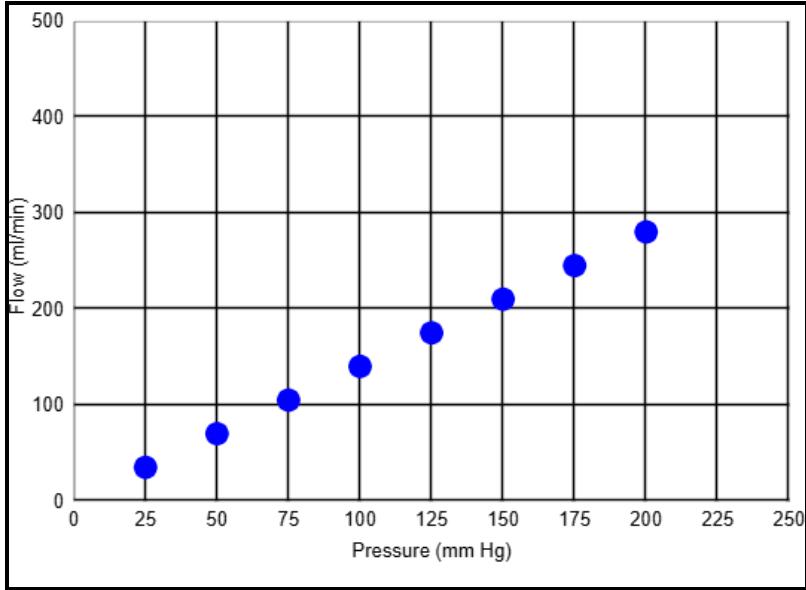
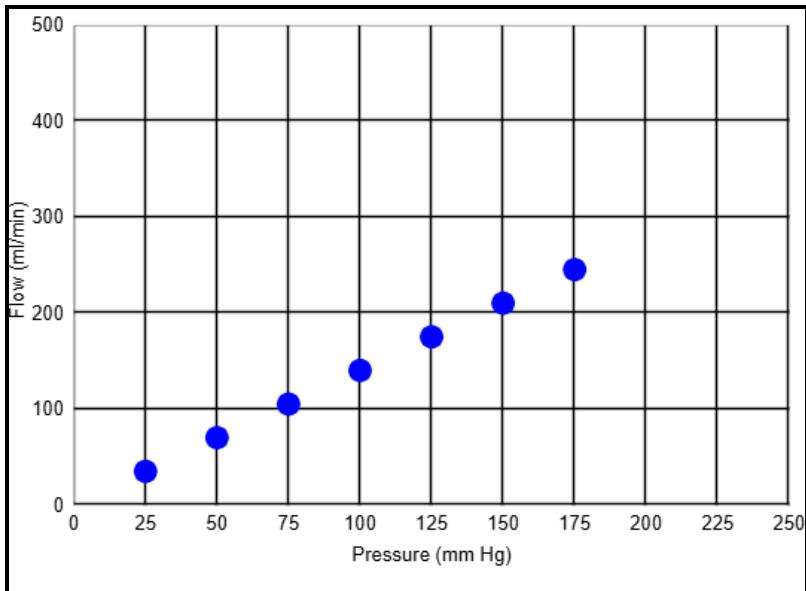
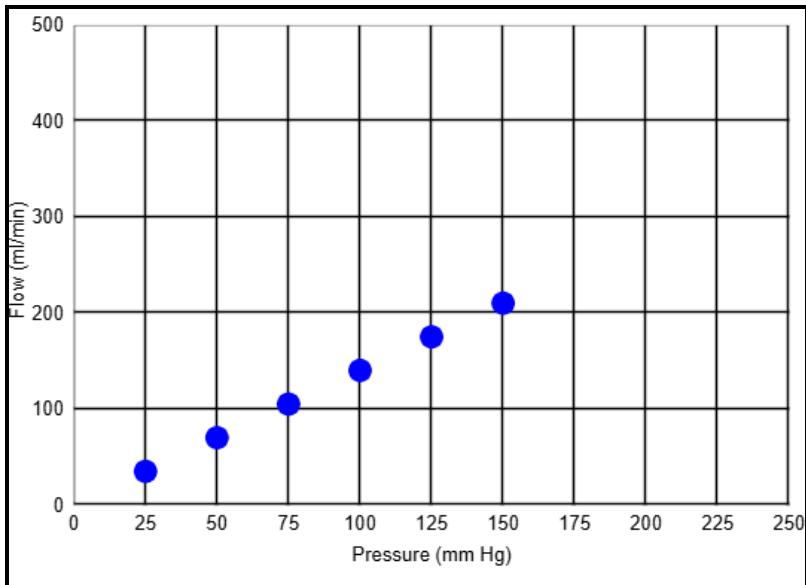
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Post-lab Quiz Results

You scored 100% by answering 4 out of 4 questions correctly.

- 1** The effect of increasing pressure was to

You correctly answered: increase flow rate.

- 2** Blood pressure is measured in

You correctly answered: mm Hg.

- 3** Which of the following variables has the greatest effect on blood flow?

You correctly answered: vessel radius.

- 4** Blood flow is measured in

You correctly answered: ml/min.

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Review Sheet Results

- 1** Explain the effect that pressure changes had on flow rate. How well did the results compare with your prediction?

Your answer:

My assumption was correct and was verified by the results of the experiment.

- 2** How does the plot differ from the plots for tube radius, viscosity, and tube length? How well did the results compare with your prediction?

Your answer:

My assumption was correct and was verified by the results of the experiment.

- 3** Explain why pressure changes are not the best way to control blood flow.

Your answer:

It does not allow the ability to quickly regulate the amount of blood or rate of blood flow in a controlled manner. Changing vessel radius is the fastest and most reliable way considering it can lower or increase the pressure of blood flow at areas close together that require different needs.

- 4** Use your data to calculate the increase in flow rate in ml/min/mm Hg.

Your answer:

Increasing the pressure by a value of 25mmHg, this increases blood flow rate by 35.05 mL/min each time.