Blood Pressure Lab

Open the virtual lab at [http://www.mhhe.com/biosci/genbio/virtual_labs/BL_08/BL_08.html](http://www.mhhe.com/biosci/genbio/virtual_labs/BL_08/BL_08.html)

1. What is the purpose of this lab?
2. What are the two objectives of the lab?
3. What do you think will happen to blood pressure as age increases?
4. Based on what you know about the heart and circulatory system, make a hypothesis about how the average blood pressure for a group of people would be affected by manipulating the age and gender of the group members.

Click on the “gender tab” and select either male or female. Then click on the “age range” tab and select an age range. Click on the “measure blood pressure” button. Each of the subjects will have their blood pressure read. Click on each person to view his/her weight and health risk factors. Fill in the data table. Write in the patients’ diastolic and systolic reading.

### Average Male & Female Systolic & Diastolic BP (mmHg)

<table>
<thead>
<tr>
<th>Age Range (years)</th>
<th>Male Systolic</th>
<th>Male Diastolic</th>
<th>Female Systolic</th>
<th>Female Diastolic</th>
</tr>
</thead>
<tbody>
<tr>
<td>11-17</td>
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<td>18-24</td>
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<td>35-44</td>
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<td>45-54</td>
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</tbody>
</table>

If the patient is overweight, (meaning they are over their optimum weight) circle or highlight—“overweight”. If the patient answers “yes” to Family history of hypertensive, high salt diet, lack of exercise, alcohol consumption, circle or highlight it.

5. Analyze the results of your experiment. Explain any pattern you observed.
6. During the course of your experiment, did you obtain any readings that were outside the normal range for the group being tested? What did you notice on the medical charts for those individuals that would explain their readings?
7. Hypertension means:
   a. High blood sugar levels
   b. High blood cholesterol levels
   c. High blood pressure levels
   d. None of the above
8. sphygmomanometer:
   a. Measures blood pressure
   b. When inflated cuts off blood flow to the brachial vein
   c. Should be used in conjunction with a stethoscope to obtain an accurate BP reading
   d. All of the above

9. In measuring blood pressure:
   a. Diastolic pressure is measured as blood first reenters the artery
   b. Systolic pressure is measured when blood flow just returns to normal in the artery
   c. Blood pressure readings are noted as systolic over diastolic pressure
   d. All of the above

10. Based on the laboratory activity, evidence shows that as a group:
   a. Males experience an increased systolic and diastolic pressure with age
   b. Males experience a decreased systolic and diastolic pressure with age
   c. Males experience an increased systolic and decreased diastolic pressure with age
   d. Males experience a decreased systolic and increased diastolic pressure with age
   e. Males have relatively constant blood pressure with age

11. Based on the laboratory activity, evidence shows that as a group:
   a. Females experience a decreased systolic and diastolic pressure with age
   b. Females experience an increased systolic and diastolic pressure with age
   c. Females experience an increased systolic and decreased diastolic pressure with age
   d. Females experience a decreased systolic and increased diastolic pressure with age
   e. Females have relatively constant blood pressure with age

12. On average for both sexes, normal blood pressure is typically defined as:
   a. 140/60
   b. 130/95
   c. 120/80
   d. 145/80

13. Based on the results of this exercise, which of the following blood pressure readings are significantly above normal, indicating hypertension?
   a. 122/78
   b. 130/84
   c. 129/81
   d. 101/75
14. Which of the following information from the medical charts appears to play the least role in determining blood pressure?
   a. Sex
   b. Height
   c. Weight
   d. Age
   e. None of the above

15. Which of the following appear to be lifestyle related risk factors for hypertension?
   a. Smoking
   b. Lack of exercise
   c. Salt intake
   d. A and B
   e. All of the above

16. A patient comes in to have their blood pressure taken. He is not a smoker, exercises daily, and consumes a healthy diet low in sodium. Based upon this information:
   a. Their blood pressure will be normal
   b. Their blood pressure will indicate hypertension
   c. You cannot estimate their reading due to the effect of genetics on blood pressure

17. What factors are known to cause the increase in blood pressure?

18. What was the general trend with blood pressure when the gender and age changed for each of the groups?

19. Did the result of your experiment support your hypothesis? Why or why not? Based on your experiment, what conclusion can you draw about the relationship of age and gender to group blood pressure averages?

20. Based on your observation, which risk factor do you think is most closely associated with hypertension?

21. What effect might obesity have on blood pressure? Does obesity alone cause a person to be at risk for high blood pressure? What other factors, in combination with obesity, might increase a person's risk for high blood pressure?