



Homeostasis and Blood Pressure Formative Assessment

LEARNING GOALS:

The human body responds to changes in heart rate, blood pressure, and other physiological changes. These changes differ across sex, age, and different medical histories. We will be supplying blood pressures and medical histories this semester due to the pandemic.

Experiment 1

Scientists measured the blood pressure of 10 adults ranging in each age group from 14 to 64. They calculated average blood pressure per each group divided by sex. The included excel file lists if blood pressure was taken either sitting or laying down. Please input the average for each major age group and male versus female. Please add this into lab report, and can be used as discussion points. In addition, please make this a graph, bar or line graph to be included in lab report data section.

Table 1

Activity level	Average blood pressure	
	Systolic blood pressure (mmHg)	Diastolic blood pressure (mmHg)
Sitting Male 14-19		
Laying down Male 14-19		
Sitting Female 14-19		
Laying down Female 14-19		
Sitting Male 20-24		
Laying down Male 20-24		
Sitting Female 20-24		
Laying down Female 20-24		
Sitting Male 25-29		
Laying down Male 25-29		
Sitting Female 25-29		
Laying down Female 25-29		
Sitting Male 30-34		
Laying down Male 30-34		
Sitting Female 30-34		
Laying down Female 30-34		
Sitting Male 35-39		
Laying down Male 35-39		
Sitting Female 35-39		
Laying down Female 35-39		
Sitting Male 40-44		
Laying down Male 40-44		
Sitting Female 40-44		
Laying down Female 40-44		
Sitting Male 45-49		
Laying down Male 45-49		
Sitting Female 45-49		
Laying down Female 45-49		
Sitting Male 50-54		
Laying down Male 50-54		
Sitting Female 50-54		
Laying down Female 50-54		
Sitting Male 55-59		
Laying down Male 55-59		
Sitting Female 55-59		
Laying down Female 55-59		
Sitting Male 60-64		
Laying down Male 60-64		
Sitting Female 60-64		
Laying down Female 60-64		

Experiment 2

Scientists studied how medical histories affect blood pressure per age group and sex. The included excel file gives medical histories on all groupings of individuals tested. Please review the medical histories and tally on included chart. Please add this into lab report, and can be used as discussion points.

Medical Histories Tally by Sex and Age Group

Subject		Family History	High Salt Diet	Alcohol Consumption	Lack of Exercise	Overweight
Female	11-17					
	18-24					
	25-34					
	35-44					
	45-54					
	55-64					
Male	11-17					
	18-24					
	25-34					
	35-44					
	45-54					
	45-64					

HYPOTHESIS: How do you think pulse and blood pressure will be affected by body position (sitting versus laying down)?

Part A. Complete the following statements, for helping with background information for the introduction section of the lab report.

1. Blood pressure is the force exerted against the _____.
2. The term blood pressure is most commonly used to refer to systemic _____ pressure.
3. The maximum pressure achieved during ventricular contractions is called _____ pressure.
4. The lowest pressure that remains in the arterial system during ventricular relaxation is called _____ pressure.
5. Blood pressure rises and falls in a pattern corresponding to the phases of the _____.
6. A pulse is caused by the _____.

Part B. This information can be used in methods and also in discussion. Please include graphs in the data section.

1. How many subjects were in the experiment?
2. Summarize the effects of body position on blood pressure? Does gender and/or medical histories play a roll. Please discuss in discussion section of lab report.
3. What are some dangers of high blood pressure?
4. What are some dangers of low blood pressure?
5. Some medical histories are more impactful on blood pressure than others. Please discuss how each of the medical history categories have an effect of blood pressure: family history, a high salt diet, alcohol consumption, lack of exercise, and being overweight.

Average Blood
Pressures (10/group)

Age	Gender	Systolic Sitting	Diastolic Sitting	Systolic Lying Down	Diastolic Lying Down
14-19	M	117	77	107	67
14-19	F	105	73	92	60
20-24	M	135	85	122	78
20-24	F	118	77	103	65
25-29	M	128	83	119	71
25-29	F	122	81	111	70
30-34	M	135	89	122	79
30-34	F	110	70	99	55
35-39	M	146	93	135	81
35-39	F	140	91	128	77
40-44	M	114	72	102	58
40-44	F	112	75	102	67
45-49	M	161	90	155	85
45-49	F	127	84	122	80
50-54	M	129	85	125	82
50-54	F	142	89	139	85
55-59	M	163	97	158	94
55-59	F	145	90	140	85
60-64	M	134	87	132	87
60-64	F	150	96	147	96

Medical History (Summary by Age) Use for Graph

3 family history, 2 high salt diet, 2 alcohol consumption, 0 overweight, 1 lack of exercise
1 family history, 4 high salt diet, 1 alcohol consumption, 0 overweight, 0 lack of exercise
3 family history, 2 high salt diet, 2 alcohol consumption, 0 overweight, 1 lack of exercise
1 family history, 1 high salt diet, 1 alcohol consumption, 3 overweight, 3 lack of exercise
1 family history, 5 high salt diet, 8 alcohol consumption, 1 overweight, 1 lack of exercise
3 family history, 3 high salt diet, 4 alcohol consumption, 2 overweight, 2 lack of exercise
4 family history, 1 high salt diet, 7 alcohol consumption, 3 overweight, 3 lack of exercise
5 family history, 4 high salt diet, 5 alcohol consumption, 2 overweight, 2 lack of exercise
2 family history, 4 high salt diet, 7 alcohol consumption, 4 overweight, 4 lack of exercise
1 family history, 5 high salt diet, 3 alcohol consumption, 2 overweight, 2 lack of exercise
1 family history, 3 high salt diet, 4 alcohol consumption, 3 overweight, 3 lack of exercise
3 family history, 2 high salt diet, 8 alcohol consumption, 3 overweight, 2 lack of exercise
3 family history, 1 high salt diet, 6 alcohol consumption, 5 overweight, 5 lack of exercise
5 family history, 0 high salt diet, 5 alcohol consumption, 3 overweight, 3 lack of exercise
6 family history, 3 high salt diet, 4 alcohol consumption, 4 overweight, 6 lack of exercise
4 family history, 5 high salt diet, 4 alcohol consumption, 6 overweight, 7 lack of exercise
6 family history, 4 high salt diet, 1 alcohol consumption, 5 overweight, 7 lack of exercise
3 family history, 2 high salt diet, 2 alcohol consumption, 7 overweight, 6 lack of exercise
5 family history, 2 high salt diet, 0 alcohol consumption, 6 overweight, 7 lack of exercise
7 family history, 5 high salt diet, 0 alcohol consumption, 8 overweight, 8 lack of exercise

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Tally by Sex and Age Group

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	25-34					
	35-44					
	45-54					
	45-64					