Cardiovascular Health

# Introduction

The heart is one of, if not the most important organ in the body that pumps blood throughout the circulatory system to provide the body with the required nutrients and oxygen needed to survive and maintain homeostasis. The aim of this investigation is to see the effects of exercise on the heart and how physical activity influences the efficiency in which the heart pumps.

How efficiently the heart works can is measured in heart rate. Heart rate can be defined as the number of times the heart beats per unit of time, usually per minute. Heart rate is based on the contractions of the ventricles in the lower chambers of the heart. A low resting heart rate is usually a sign of healthy cardiovascular health. The heart can be affected by factors that change your heart health, some examples are smoking, inactivity and obesity. These negative factors reduce the amount of oxygen that gets into the blood which makes your heart rate go higher to make up for the needed oxygen.

A factor that affects heart rate and heart health is exercise/physical activity. Physical activity improves cardiovascular health as it exercises the cardiac muscles present in the heart. When the body is exerted to physical activity, the demand for oxygenated blood to the muscles increases, causing the heart to have more forceful contractions and a higher bpm to meet the demand for oxygen. Over time, the heart’s contractions get stronger, causing it to pump less to meet the demand of the body, and making the overall resting heart rate lower. The opposite is a higher heart rate, which means the heart needs to pump more to meet oxygen demands, a sign of a low cardiovascular health.

# Hypothesis

Subjects who exercise more will have a lower resting heart rate to the subject who exercise less frequently.

**Independent Variables:**

* The subject

**Dependent Variables:**

* The heart rates of the subjects

**Controlled Variables:**

* Age
* The subject heart rate must be resting
* Gender

# Materials and Method

* Book or computer to record results
* Subject
* Stopwatch or Phone
* Calculator

# Method

1. Find pulse on the side of your neck or on your wrist
2. Count the amount of beats for thirty seconds than stop
3. Multiply the number by 2 to find the beat per minute or BPM
4. Add result into a table
5. Repeat steps 1-4 two more times
6. Calculate average of all three of the results
7. Write down how many days a week you exercise and if you are a male or a female on the table

# Table / Results

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | Resting Heart rate (beats/minute) | | |  | GENDER |
| Subject | Exercise | 1 | 2 | 3 | Average | Gender |
| 1 | 5-6 | 52 | 50 | 48 | 50 | M |
| 2 | 5-6 | 50 | 45 | 72 | 55.55 | F |
| 3 | 3-4 | 66 | 70 | 70 | 68.69 | M |
| 4 | 3-4 | 80 | 80 | 80 | 80 | M |
| 5 | 3-4 | 80 | 82 | 86 | 84 | M |
| 6 | 1-2 | 70 | 72 | 68 | 70 | F |
| 7 | 1-2 | 76 | 70 | 70 | 72 | F |
| 8 | 3-4 | 66 | 68 | 66 | 67 | F |
| 9 | 1-2 | 66 | 62 | 72 | 67 | F |
| 10 | 3-4 | 76 | 72 | 68 | 72 | F |
| 11 | 1-2 | 82 | 72 | 78 | 77 | M |
| 12 | 1-2 | 96 | 88 | 86 | 90 | F |
| 13 | 1-2 | 78 | 76 | 78 | 77.3 | F |
| 14 | 1-2 | 54 | 52 | 50 | 53.33 | F |
| 15 | 3-4 | 50 | 50 | 44 | 48 | F |
| 16 | 3-4 | 71 | 72 | 74 | 72.33 | M |
| 17 | 3-4 | 71 | 71 | 71 | 71 | F |
| 18 | 3-4 | 80 | 79 | 78 | 79 | F |
| 19 | 3-4 | 81 | 82 | 78 | 80.33 | F |
| 20 | 5-6 | 71 | 67 | 69 | 69 | F |
| 21 | 5-6 | 65 | 64 | 66 | 65 | M |
| 22 | 3-4 | 80 | 80 | 80 | 80 | M |
| 23 | 1-2 | 85 | 90 | 83 | 86.67 | F |
| 24 | 5-6 | 60 | 60 | 63 | 61 | F |
| 25 | 5-6 | 59 | 60 | 63 | 60.67 | M |
| 26 | 1-2 | 80 | 83 | 82 | 81.67 | M |
| 27 | 1-2 | 80 | 80 | 80 | 80 | F |
| 28 | 3-4 | 70 | 77 | 76 | 74.33 | F |
| 29 | 5-6 | 60 | 61 | 62 | 61 | F |
| 30 | 5-6 | 60 | 60 | 58 | 59.33 | M |

|  |  |
| --- | --- |
| Days exercised per week | Average BPM |
| 1-2 | 83.89 |
| 3-4 | 73.05 |
| 5-6 | 60.19 |

