**Cardiovascular Health in Teenagers**

20/03/22

Katrina Aroko

**Introduction**

This investigation will look into what regular exercise does to your heart rate and how it impacts it. The goal is to devise a study that will examine the impact of lifestyle factors on resting heart rate.

**Research**:

Heart rate is the number of times your heart beats in one minute. You can measure your heartbeat on your wrist, neck, feet or the inside of your elbows. When the heart and the blood arteries transport blood around your body this is a part of your cardiovascular system. Your heart pumps blood throughout your body, delivering important oxygen and minerals. It's critical to live a healthy lifestyle if you want to keep your heart healthy. Other than exercise the weather, emotions, standing up, body size, medications, caffeine and nicotine can alter your heart rate. Regular exercise enhances the muscles' ability to draw oxygen from the blood, requiring the heart to pump less blood to the muscles, which reduces stress hormones, which might cause the heart to work harder.

**Hypothesis**:

It is hypothesised that students who exercise on a daily basis will have better heart health than those who do not. The independent variable of this investigation is whether the students exercise regularly or not. The dependent variable of this investigation is the heart rate of the students. The reason behind that hypothesis was that exercise reduces the demand for the heart to pump more blood to the muscles by improving the muscles' ability to extract oxygen from the blood. Stress hormones are reduced, which may stimulate the heart to pump harder. Reduces blood pressure and slows the heart rate.

**Materials and Method**

**Materials**:

20x Students (15-18 years old)

Timer

Laptop

**Method:**

Design a table a 21 x 6 table on your laptop. Along the first row create headings for each column the first should be ‘Participants’ followed with ‘Beats/m’, ‘Beats/m 2’, ‘Beats/m 3’ , ‘Average’ then ‘ Days of exercise’. On the first column under ‘Participants’ label the beginning of each row from 1- 20 which will replace the student’s names with a number. From there every student you record will take up one 1 row with their beats/m and their days of exercise

For this experiment you will need to gather 20 students from ages ranging from 15-18 years old. Students must be well rested so they can measure their resting heartbeat. Have every student to measure their heartbeat either in their neck or the wrist. They count their heartbeat for 30 seconds and after they multiply it by two to make 1 minute. They will repeat those steps two more times so you can find the average with the three takes. After they count their heartbeats ask them how many days a week so they work-out, jot down each student on a separate line.

**Reliability & Validity:**

It is possible to determine if the results were a fluke or indicative of the norm by repeating an experiment numerous time. It guards you against making hasty conclusions based on scant information.

**Results**

*Figure 1.1* shows the results and averages from the teenage students who counted their heart beats. To find the averages you add all the three trials and divide them by three, please note that when you add the three takings you must place a bracket before and after the three trials (E.g. (50 + 44 + 50) /3 = 48). *Figure 1.2* is showing the averages dot plotted into the right area.

**Data analysis:**

*Figure 1.1 table*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Participants | Beats/m 1 | Beats/m 2 | Beats/m 3 | Avg. Beats/m | Days of exercise |
|  | 50 | 44 | 50 | 48 | 3 |
|  | 54 | 52 | 50 | 52 | 1-2 |
|  | 96 | 88 | 86 | 90 |  |
|  | 66 | 62 | 72 | 66 | 0 |
| 5. | 76 | 72 | 68 | 72 | 4 |
| 6. | 70 | 72 | 68 | 70 |  |
| 7. | 76 | 70 | 70 | 72 |  |
| 8. | 82 | 72 | 78 | 77 | 0 |
| 9. | 94 | 102 | 100 | 98 | 5+ |
| 10. | 50 | 45 | 72 | 55 | 5+ |
| 11. | 66 | 77 | 70 | 71 |  |
| 12. | 80 | 80 | 80 | 80 |  |
| 13. | 86 | 84 | 80 | 83 |  |
| 14. | 71 | 72 | 74 | 72 |  |
| 15. | 66 | 68 | 66 | 66 | 4 |
| 16. | 84 | 80 | 68 | 77 | 0 |
| 17. | 86 | 92 | 90 | 89 | 3 |
| 18. | 64 | 72 | 68 | 68 | 1 |
| 19. | 70 | 74 | 76 | 73 | 0 |
| 20. | 68 | 78 | 73 | 73 | 3 |

*Figure 1.2 dot plot*

*Chart

Description automatically generated*