**Investigating exercise that affects heart rate**

**Introduction:**

The number of times your heart beats each minute is referred to as heart rate (bpm). Any physical activity that makes the body consume energy and move is referred to as exercise. It can include more relaxed activities like walking, dancing, or playing sports as well as scheduled exercises like weightlifting, running, or yoga. Frequent exercise has a variety of positive effects on the body, including bettering sleep quality, reducing the risks of diseases like diabetes and cancer, strengthening muscles and bones, and increasing cardiovascular health. The heart rate can be significantly impacted by exercise. Your heart rate rises during exercise to keep up with your body's increased need for oxygen and minerals. This is because when you exercise, your muscles need extra energy, which your heart provides by pumping more blood. The intensity and duration of the activity, as well as the person's level of fitness, all have a role in how exactly exercise affects heart rate. In general, the heart rate will be higher the more intensive the exercise. As you exercise, your sympathetic nervous system is stimulated, which causes the adrenal glands to release the hormones also known as adrenaline, raising your heart rate. The heart must work harder and faster to pump out the oxygen because of the muscle. Regular exercise helps your heart muscle become stronger and more effective at pumping blood, which helps your heart health over time. A reduced resting heart rate as a result can be an indication of cardiovascular health. It is crucial to remember that certain people can have underlying heart issues that exercise can make worse. When beginning a new workout regimen, it is always advised to speak with a healthcare provider, especially if you have any pre-existing medical concerns.

**Hypothesis:** As you exercise more longer, the heart rate increases because of how intense the exercises is which make the muscles and heart rate work intensely pumping lots of blood.

**Dependent Variable:** Heart rate

**Independent Variable: Number of days you exercise**

**Controlled Variable:** Age, gender, time taken to measure person heart rate (1 minute)

**Materials**: Materials used were a timer, calculator, pen, laptop, hand, and a piece of paper to put other people results in the table then put in a bar graph, 20 participants

**Method:** Put your middle and index fingers on your wrist (where your pulse is) and count how many heartbeats you feel in a minute using a watch or clock that counts down (count your heartbeat for 15 seconds and multiply by 4). It is advisable to repeat the measurements at least three times to maximise the validity and reliability of the assessment. The average should then be calculated by dividing the number of times the measurements were repeated.

**References:**

* [**https://www.nhs.uk/common-health-questions/accidents-first-aid-and-treatments/how-do-i-check-someones-pulse/#:~:text=place%20your%20index%20(first%20finger,how%20many%20beats%20a%20minute**](https://www.nhs.uk/common-health-questions/accidents-first-aid-and-treatments/how-do-i-check-someones-pulse/#:~:text=place%20your%20index%20(first%20finger,how%20many%20beats%20a%20minute)
* [**https://my.clevelandclinic.org/health/diagnostics/17402-pulse--heart-rate**](https://my.clevelandclinic.org/health/diagnostics/17402-pulse--heart-rate)
* [**https://www.healthdirect.gov.au/resting-heart-rate#:~:text=Physical%20activity%20%E2%80%94%20if%20you've,excited%20your%20heart%20beats%20faster**](https://www.healthdirect.gov.au/resting-heart-rate#:~:text=Physical%20activity%20%E2%80%94%20if%20you've,excited%20your%20heart%20beats%20faster)**.**

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| --- | --- | --- | --- | --- | --- | --- |
| SUBJECT | EXERCISE | Resting heart rate (beats/minute) | | | Average | GENDER |
| Subject | exercise | 1 | 2 | 3 | Average | Gender |
| 1 | 6 | 64 | 72 | 80 | 72 bpm | M |
| 2 | 3 | 80 | 76 | 72 | 76 bpm | M |
| 3 | 2 | 77 | 76 | 75 | 70 bpm | M |
| 4. | 0 | 72 | 64 | 74 | 70 bpm | F |
| 5. | 3 | 80 | 78 | 77 | 78 bpm | M |
| 6. | 5 | 80 | 88 | 90 | 86 bpm | M |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 7. | 6 | 78 | 60 | 70 | 69 bpm | M |
| 8. | 0 | 86 | 90 | 84 | 86 bpm | F |
| 9. | 4 | 77 | 62 | 66 | 68 bpm | F |
| 10. | 3 | 85 | 74 | 77 | 79 bpm | F |
| 11. | 6 | 83 | 79 | 80 | 80 bpm | M |
| 12. | 3 | 77 | 71 | 79 | 75 bpm | M |

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| --- | --- | --- | --- | --- | --- | --- |
| 13. | 4 | 82 | 70 | 92 | 81 bpm | F |
| 14. | 2 | 80 | 76 | 72 | 76 bpm | M |
| 15. | 5 | 82 | 86 | 82 | 83 bpm | F |
| 16. | 5 | 88 | 77 | 82 | 82 bpm | F |
| 17. | 3 | 75 | 78 | 80 | 77 bpm | M |
| 18. | 2 | 80 | 75 | 77 | 77 | M |
| 19. | 4 | 78 | 74 | 76 | 76 | F |
| 20. | 5 | 82 | 77 | 74 | 78 | F |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Exercise (Days) | 0-1 | 2-3 | 4-5 | 6+ |
| Subject |  |  |  |  |
| 1 |  |  |  |  |
| 2 |  |  |  |  |
| 3 |  |  |  |  |