Cardiovascular health in teenagers by Soi Tar

**Introduction:**

Cardiovascular health refers to the health of the heart, blood vessels, veins, and other circulatory system components. It is vital for a person's health as the blood pumped through their heart supplies vital oxygen and nutrients throughout their body. Without the nutrients, the body would be led to respiratory failure causing the body to shut down slowly. To have healthy cardiovascular health, a person needs to eat healthily, exercise, manage stress and control cholesterol and blood pressure. An indicator of cardiovascular health is resting heart rate, as it indicates whether a person is healthy by the number of beats per minute.

According to (foundation, 2020), resting heart rate is the number of times a person's heart beats per minute when at rest (e.g. relaxed, sitting down, or lying down). A regular heart rate for adults is ranged between 60-100 beats a minute. A lower heart rate would generally imply a more efficient heart function and better cardiovascular fitness. For example, an athlete might have a standard resting heart rate closer to 40 BPM, unlike a non-athlete who might have a resting heart rate closer to 70 BPM. Factors that can affect the heart rate may include:

* Age
* Fitness and activity levels
* Being a smoker
* Having cardiovascular disease, high cholesterol or diabetes
* Air temperature
* Body position (e.g. standing up or laying down)
* Emotions
* Body size
* Medications.

These are a few of the factors that can influence a heart rate. In this investigation, exercise is the factor that will be looked at. Exercise is the engagement in physical activity to sustain or improve health and fitness. Exercise is essential for improving overall health, maintaining fitness, and helping to prevent the development of obesity, hypertension, and cardiovascular diseases. Regular cardiovascular exercises improve the efficiency of the functioning of the heart, lungs, and the circulatory system.

**Hypothenuse:**

During this investigation, the teenagers who exercise more and are healthy will have a lower resting heart rate than teenagers who exercise less, as their efficiency of the functioning of the heart improves.

**Variables:**

Independent variable: the amount of exercise

Dependent variable: the heart rate (beats/minute)

Controlled variables: the age range 16-17, subjects were resting, and method of acquiring bpm.

Materials:

Stopwatch x1

Participants/subjects (age 15-17 (yr11s) x25

Calculator x1

Laptop x1

**Method:**

1. Create the table (subheadings from left to right): subject, exercise (days/week), resting heart rate beats per minute trials 1, 2, and 3, average BPM, sex
2. Place your finger on the pulse of participant 1 and begin timing.
3. Count the heart beats over 30 seconds.
4. Multiply the result acquired by 2 to attain the beats per minute (BPM) and record this result.
5. Do steps 1 through to 3 twice more and find the average of that participant's BPM, record this result.
6. Record the sex and "days of exercise per week" of that participant.
7. Do steps 1 through to 5 for all 25 participants.
8. Take the average scores of each category of "days of exercise per week."
9. Record these results and graph it

**Results:**

Figure 1.1

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | Heart rate (beats/minute) | | | |  |
| subject | Exercise (days) | 1 | 2 | 3 | average | sex |
| 1 | 1 | 70 | 72 | 68 | 70 | F |
| 2 | 1 | 76 | 70 | 70 | 72 | F |
| 3 | 2 | 66 | 68 | 66 | 67 | F |
| 4 | 2 | 66 | 62 | 72 | 67 | F |
| 5 | 4 | 50 | 50 | 44 | 48 | F |
| 6 | 0 | 96 | 88 | 86 | 90 | F |
| 7 | 3 | 54 | 52 | 70 | 59 | F |
| 8 | 1 | 78 | 76 | 78 | 77 | F |
| 9 | 3 | 71 | 74 | 72 | 72 | M |
| 10 | 2 | 86 | 84 | 82 | 82 | M |
| 11 | 2 | 80 | 80 | 80 | 80 | M |
| 12 | 4 | 66 | 77 | 70 | 71 | M |
| 13 | 2 | 76 | 72 | 68 | 72 | F |
| 14 | 5 | 82 | 72 | 78 | 77 | M |
| 15 | 5 | 94 | 102 | 100 | 99 | M |
| 16 | 4 | 50 | 45 | 72 | 56 | F |
| 17 | 5 | 70 | 72 | 72 | 71 | F |
| 18 | 1 | 84 | 81 | 83 | 83 | F |
| 19 | 2 | 68 | 64 | 64 | 65 | F |
| 20 | 1 | 66 | 64 | 68 | 66 | F |
| 21 | 1 | 72 | 70 | 74 | 72 | F |
| 22 | 0 | 86 | 82 | 84 | 84 | F |
| 23 | 3 | 64 | 66 | 63 | 64 | M |
| 24 | 1 | 71 | 70 | 74 | 72 | M |
| 25 | 1 | 68 | 64 | 62 | 67 | M |

Figure 1.2

|  |  |
| --- | --- |
| Average Resting Heart Rate (beats/minute) | |
| Exercise Group (days/week) |  |
| 0 | 87 |
| 1 | 73 |
| 2 | 72 |
| 3 | 65 |
| 4 | 58 |
| 5+ | 82 |

Figure 1.3

# Bibliography

Australian Indigenous Health InfoNet. (2022, March 23). *Cardiovascular Health*. Retrieved from Australian Indigenous Health InfoNet: https://healthinfonet.ecu.edu.au/learn/health-topics/cardiovascular-health/

Edward R. Laskowski, M. (2020, October 2). *What's a normal resting heart rate*. Retrieved from Mayo Clinic: https://www.mayoclinic.org/healthy-lifestyle/fitness/expert-answers/heart-rate/faq-20057979

foundation, h. (2020, March). *Resting heart rate*. Retrieved from Health direct: https://www.healthdirect.gov.au/resting-heart-rate

Government of Western Australia . (2022). *Department of Health* . Retrieved from Heart health (cardiovascular): https://www.healthywa.wa.gov.au/Health-conditions/Heart-health-cardiovascular#:~:text=The%20cardiovascular%20system%20relates%20to,a%20healthy%20diet%20and%20exercising.

Harvard Health Publishing Harvard Medical School. (2021, February 15). *the many ways exercise helps your heart*. Retrieved from Harvard Health Publishing Harvard Medical School: https://www.health.harvard.edu/heart-health/the-many-ways-exercise-helps-your-heart

Healthy Wa. (2022, March 23). *Heart Health (cardiovascular)*. Retrieved from Healthy WA: https://www.healthywa.wa.gov.au/Health-conditions/Heart-health-cardiovascular

My health finder. (2021, July 8). *Keep your heart healthy*. Retrieved from my health finder: https://health.gov/myhealthfinder/topics/health-conditions/heart-health/keep-your-heart-healthy

National Heart, Lung, and Blood Institute. (2018, April 26-27). *Respiratory Failure*. Retrieved from National Heart, Lung, and Blood Institute: https://www.nhlbi.nih.gov/health-topics/respiratory-failure

Solan, M. (2021, November 16). *your resting heart rate can reflect your current and future health*. Retrieved from Harvard Health Publishing Harvard Medical School: https://www.health.harvard.edu/blog/your-resting-heart-rate-can-reflect-your-current-and-future-health-201606172482