Heart Rate and the factors that may affect it

Heart rate is the speed at which a heart can beat per minute. It is a significant index that measures how well a person’s cardiovascular health is. The average resting heart rate for teenagers and adults is 60-100 beats per minute. Lower resting heart rate can indicate better cardiovascular health. There is a variety of factors that can affect heart rate speeds. For example, people who do regular exercise has been shown to have a lower resting heart rate levels as their heart muscles become stronger and more efficient at pumping blood.

Some factors that can affect heart rate includes:

1. Age: As the process of aging takes place, the heart rate tends to decrease ad the heart muscle becomes less efficient requiring more time to pump blood
2. Physical exercise: Regular engagement in exercise and physical activities can increase heart rate to be able to supply the body with oxygen, nutrients, and blood. The more intense and physical the exercise, the higher the heart rate.
3. Stress: The body releases stress hormones like adrenaline making the heart beat faster. The blood pressure also rises as a way of helping the body cope with the stress.
4. Medication: Some medications can increase or decrease heart rates.
5. Body size: People with a larger size may have slower heart rates then smaller people as their heart need to pump more blood to reach all parts of the body.
6. Medical conditions: Certain medical conditions like anemia, thyroid problems and heart disease can affect heart rate.

Task Outline

Students will conduct an investigation by collecting data on a factor of their choice and measure its effects on heart rate. Students will collect 3 heart rate data from other teenagers

Hypothesis

In this investigation, exercise has been chosen as the main factor of heart rate among teenagers. A hypothesis has been created to assist with the investigation to serve as a prediction for the outcome of the assessment. It is hypothesized that teenagers who exercises more times per week will have a lower resting heart rate as research suggests that people who exercise more will have lower heart rates due to the heart muscle becoming stronger and more efficient at pumping blood.

Variables

Dependent Variable: Heart Rate

Independent Variable: Number of days people exercise

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

Method

Materials/equipment needed: Stopwatch, clock or timer

1. Ready the timer or stopwatch to 30 seconds
2. Place the middle and index finger on wrist and locate pulse (pulse is normally detected on the wrist closest to the thumb)
3. When pulse is found, start the timer/stopwatch and wait for 30 seconds
4. Count how many pulses or beats are felt within the 30 seconds mark
5. After time is completed, multiply the pulse number by 2
6. Repeat step two more times (total 3 times) to increase validity and reliability of data
7. Average the findings out by adding the 3 test outcomes together and dividing it by 3 to find the average
8. Record the findings on a table and anaylse the data

Data

0-1 Days of Exercise Average: 77.5

2-3 Days of Exercise Average: 75.375

4-5 Days of Exercise Average: 78.125

6-7 Days of Exercise Average: 70.5

References

Intensive Care NSW. (2021, April 6). *Cardiovascular system*. Intensive Care NSW. <https://aci.health.nsw.gov.au/networks/icnsw/patients-and-families/patient-conditions/cardiovascular-system#:~:text=The%20cardiovascular%20system%20is%20made,and%20remove%20its%20carbon%20dioxide>.

*2 easy, accurate ways to measure your heart rate*. (2022). Mayo Clinic. <https://www.mayoclinic.org/healthy-lifestyle/fitness/expert-answers/heart-rate/faq-20057979>

Susan. (2012, March 19). *Factors Affecting Your Heart Rate*. Gallagher Fitness Resources. <https://activesalem.com/factors-affecting-heart-rate/>

*Cardiac Output*. (2019). Alberta.ca. <https://myhealth.alberta.ca/Health/Pages/conditions.aspx?hwid=tx4080abc#:~:text=During%20exercise%2C%20your%20heart%20typically,left%20ventricle%20before%20it%20pumps>.

*How Does Exercise Affect Your Heart, and What are the Benefits? – New England Baptist Hospital*. (2016, February 17). New England Baptist Hospital. <https://www.nebh.org/blog/how-does-exercise-affect-your-heart-and-what-are-the-benefits>

‌

‌

‌

‌

‌