Scientific Report:

The aim of this investigation is to look at the correlation between exercise and resting heart rate. Heart rate is the frequency of the heartbeat measured by the number of contractions of the heart per minute. Heart rate can be affected by many things such as age, gender, exercise and many more. This investigation focuses on the effects exercise has on teenagers resting heart rate

**Aim:** the aim of the investigation is to look at he correlation between exercise and resting heart rate

**Hypothesis:** It is hypothesised that students in year 11 who do regular exercise weekly will have a lower resting heart rate compared to people who do not exercise regularly.

**Independent variable:** Amount of exercise being performed by students.

**Dependent variable:** Resting heart rate

**Controlled:** Amount of time heart rate is being measured for

**Background research:**

Heart rate is the frequency of the heartbeat measured by the number of contractions of the heart per minute. Exercise has long term cardiovascular health benefits including lowering resting heart rate. A normal resting heart rate for adolescents is between 60-100 beats per minute. It is known that if an aerobic exercise is performed for a long time, it will affect the parasympathetic nerve, increasing stroke volume and lowering the persons resting heart rate. This has a positive effect on reducing cardiovascular diseases. Maintaining a healthy weight through diet, avoiding high fat foods and making physical activity a part of your lifestyle are important steps to keeping a healthy heart. In addition, exercising regularly can help ensure normal blood pressure and blood flow. Exercises such as running and other vigorous exercises have the most effect on lowering a persons heart rate whereas moderate-intensity exercise such as brisk walking has less effect. Resting heart rate is lowered as the heart muscle becomes stronger and gets better at pumping out more blood per heartbeat. The body needs fewer heartbeats to pump the same amount of blood. If your heart muscle is weak it needs to beat more times to pump the same amount of blood. It is recommended that teens do at least 60 minutes of moderate to vigorous physical activity daily

**Materials:**

* Timer
* Microsoft word
* Calculator
* Graph paper

**Method**

1. Participants were asked how many days a week they do at least 30 minutes of exercise
2. The participants are asked to remain seated for one minute and rest.
3. A timer was set for 30 seconds.
4. The person measuring the participants heart rate, found the participants pulse through the wrist
5. The timer was started and the person measuring begins counting the participants pulse
6. After thirty seconds the timer was stopped
7. The person measuring the heart rate then doubled the score they counted through the pulse (to create a 1-minute time)
8. This score was then recorded
9. The test was completed three times
10. The results from the three tests where then averaged to find each participants average resting heart rate
11. The results from these averages were then grouped into categories in relevance to how many days of exercise they did
12. These groups were then averaged with each of the participants average to find the overall group average
13. This data was then placed into a bar graph

Data

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | Resting Heart rate (beats/minute) | | |  | GENDER |
| Subject | Exercise | 1 | 2 | 3 | Average | Gender |
| 1 | 2-3 | 82 | 70 | 92 | 81 | F |
| 2 | 0-1 | 72 | 64 | 74 | 70 | f |
| 3 | 0-1 | 86 | 90 | 84 | 86 | F |
| 4 | 2-3 | 82 | 86 | 82 | 83 | F |
| 5 | 4-5 | 87 | 83 | 88 | 86 | F |
| 6 | 2-3 | 77 | 76 | 75 | 76 | M |
| 7 | 4-5 | 70 | 67 | 72 | 69.67 | F |
| 8 | 2-3 | 85 | 74 | 77 | 79 | F |
| 9 | 4-5 | 77 | 62 | 66 | 68 | F |
| 10 | 4-5 | 64 | 71 | 77 | 71 | F |
| 11 | 2-3 | 78 | 78 | 80 | 79 | F |
| 12 | 2-3 | 70 | 68 | 58 | 65 | F |
| 13 | 2-3 | 80 | 76 | 72 | 76 | M |
| 14 | 5+ | 64 | 72 | 80 | 72 | M |
| 15 | 5 | 78 | 60 | 70 | 69 | M |
| 16 | 5+ | 86 | 82 | 65 | 78 | M |
| 17 | 4-5 | 80 | 88 | 90 | 86 | M |
| 18 | 4-5 | 62 | 62 | 64 | 62 | M |
| 19 | 4-5 | 62 | 64 | 62 | 63 | M |
| 20 | 2-3 | 76 | 80 | 72 | 76 | M |
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Averages s

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| --- | --- | --- | --- |
| 0-1 | 2-3 | 4-5 | 5+ |
| 78 | 77 | 72 | 73 |

In the data the is a trend of the more exercise you do the lower you heart rate is and, the less exercise that you do the higher you heart rate. There is no outliers in the data. This experiment has problems in the experiment as it does not account for extraneous variables such as anxiety, stress, health issues ect.

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