**GENERAL HUMAN BIOLOGY – YEAR 11**

**TASK 2 – EFFECT OF EXERCISE INVESTIGATION**

**NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ WEIGHTING: 10%**

**DATE: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ MARK: \_\_\_\_\_ / 55 = \_\_\_\_\_ %**

**Part A Literature Review (Research) [15 Marks]**

You will be designing an investigation to look at the effects of exercise on the circulatory system. In order to investigate a problem a scientist must always review what information is already available on the topic. This allows them to know what the most current research has found and how they should direct their own research. Your research questions have been provided for you and the responses are due in class **Monday 11th March**.

But before you must complete a literature review These notes are to be handed in prior to your investigation work.

**Answer the following questions:**

1. What is the effect of regular exercise on the body?
2. How does regular exercise improve the circulatory and respiratory systems?
3. What can happen to the body if a person lives a sedentary lifestyle?
4. Aside from exercise, what else can person do to improve the functioning of the circulatory and respiratory systems?
5. Drugs and diet also play a large role in the proper functioning of the body. Briefly explain the effects of illicit drug use and poor diet choices on body functioning.
6. What lifestyle choices can a person make to improve their health and wellbeing? [Be specific in your response]

You also need to provide a reference list/bibliography. Hand this in as a separate sheet attached to your note-taking sheet. You must include at least four references. If you do not provide a reference list of at least four references you will lose **3 marks** overall.

**Part B Investigation (In-class) [40 Marks]**

Complete a series of experiments to discover the effect of exercise.

**Part B Investigation (In-class) [40 Marks]**

***BACKGROUND INFORMATION***

**Heart rate** refers to the number of times the heart beats per minute to supply oxygen to muscles and remove waste products by taking them to the lungs via the heart. The number of beats is directly related to the workload being placed on the heart. For adults 18 and older, a normal resting heart rate is between 60 and 100 beats per minute (bpm), depending on the person’s physical condition and age.

Heart pumps blood to body tissue to provide oxygen & nutrients. As blood moves it pushes against walls of blood vessels. The strength of this pushing is **blood pressure.**

With exercise or physical activity, the heart rate increases to supply the muscles with more oxygen to produce extra energy. The heart can beat up to 200 times per minute with extreme exercise.

When we are excited, scared, or anxious our heart gets a signal to beat faster.

There are two ways the heart can meet the body's need for oxygen during exercise. It can **beat faster** or it can **beat harder**, moving more blood per pump. But it can only beat harder if it has been strengthened through regular exercise.

***AIM***

To determine the effect of exercise on blood pressure and heart rate.

***MATERIALS***

* Timer
* Blood pressure monitor
* Heart Rate monitors

***PROCEDURE***

1. Measure the subject’s resting heart rate over a 20 second time period. Record in results table
2. Measure subject’s blood pressure. Record results at the bottom of the table
3. Subject is to complete five (5) minutes of walking up and down the stairs.
4. Record the subject’s heart rate (over a 20 second time period) and record results in the table and then measure blood pressure after exercise and record results at the bottom of the table.
5. Once subject’s heart rate has returned to the resting heart rate level, they are to complete five minutes of gentle walking.
6. Record the subject’s heart rate (over a 20 second time period) and record in the results table
7. Once subject’s heart rate has returned to the resting heart rate level, they are to complete five minutes of an aerobic exercise of their choice. List provided below.
8. Record the subject’s heart rate in the results table.
9. Complete table by writing the results from FOUR other individuals in the class in your table.

***Aerobic Exercise Option***

* *Star jumps*
* *Skipping*
* *Jogging on the spot*
* *Burpees*
* *Basketball Jumps*
* *Mountain Climbers*
* *Ice skater*
* *Lunges (moving or on the spot)*

***RESULTS & DISCUSSION***

1. Fill in your results in the table below [4 marks]

|  |  |  |  |
| --- | --- | --- | --- |
| Activity | Measurements | Activity | Measurements |
|  | Heart Rate  (beats/min) |  | Heart Rate  (beats/min) |
| Resting |  | Gentle Walking |  |
|  |  |
|  |  |
|  |  |
|  |  |
| Average |  | Average |  |
| Steps |  | Aerobic Exercise |  |
|  |  |
|  |  |
|  |  |
|  |  |
| Average |  | Average |  |

Resting Blood Pressure: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Blood Pressure After Exercise: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2.Graph your results on the separate graph paper [6 marks]

3. Formulate a hypothesis for your investigation. [2 marks]

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4. What was the independent variable and dependent variable of this investigation? [2 marks]

INDEPENDENT: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

DEPENDENT: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. State **three** variables that have been controlled for the investigation to be fair. [3 marks]

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TWO: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

THREE: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6. For the variables you suggested, state how you controlled each one. [3 marks]

ONE: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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7. What was the purpose of taking the resting heart rate at the start of the experiment? [2 marks]

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8. Using whole sentences summarise what happened in your results. Describe any trends seen in the data. [3 marks]

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9. Explain how you achieved the results you did using your knowledge of the respiratory system, gas exchange and the body’s need for nutrients. You may include diagrams to help with your explanations. [5 marks]

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***CONCLUSION***

10. What do the results tell you about your original aim or hypothesis? Which results specifically show this? [2 marks]

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1. What effect would exercise have on Blood pressure, explain your answer. [2 marks]

1. Is the data you collected supported by the research you attained in your literature review? Explain in detail. [4 marks]

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***EVALUATION***

12. What problems or difficulties did you have and how might you solve these? [2 marks]

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13. How could you improve your investigation to ensure it were more reliable if you were to do it again? [2 marks]

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