**Biology Unit 7: Human Body Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Physical Exercise and Your Cardiac Rate**

**Introduction:**

You will be testing how **aerobic** and **anaerobic** exercises affect your cardiac rate (or heart beats per min). You will also be evaluating your overall cardiovascular fitness by examining your recovery rate after exercise.

**Pre-Lab:**

**Define or describe the following:**

1. Anaerobic Respiration:
2. Aerobic Respiration:
3. Resting heart rate:
4. Examples of anaerobic exercises:
5. Examples of aerobic exercieses:
6. **Cardiac Lab Opt-Out Form**

Dear Parents or Guardians,

On May 2nd and 3rd, our Biology class will be collecting data so that our students can complete a lab comparing anaerobic and aerobic activities. To collect this data, we will need your permission to allow them to participate in a 100 meter dash as well as a controlled 400 meter jog. We will make sure that we properly warm-up each student prior to the activity. **If your student CANNOT participate in the lab, please sign below.**

Thank You, Mrs. Johnson

Student Name (Please Print) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Parent Signature \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



1. **Read the Procedure**

Carefully read the procedure and record questions you have below. It is important that you get your questions answered at the beginning of lab so we can limit error during our data collection.

**Questions:**

**End of Pre-Lab End of Pre-Lab End of Pre-Lab End or Pre-Lab**

**Procedure:**

**Resting Heart Rate**

1. Take 2 minutes to locate your cardiac rate (pulse) in your neck. Once you find it, practice counting your rate. When taking your rate, make sure you do not use your thumb. If you’re having trouble, please let us know and we can help you.
2. As directed by your teacher, lay your head on your desk and rest for 5 minutes. It is imperative that you are completely still during the 5 minute rest period.
3. At the end of the 5 minute rest period, your teacher will lead you through your resting heart rate collection for an additional 5 min. Please listen for their prompts.
   1. **ALL** cardiac rates will be counted for 15 seconds and multiplied by 4
   2. **ALL** cardiac rates must be taken with **MINIMAL MOVEMENT**. Movement will affect your data!
   3. A total of 4 cardiac rates will be taken at the following rest intervals:
      * + 0 min, 1min, 3 min, and 5 min AFTER the 5 minute rest period.
        + Record your data in the table provided.

**Warm-Up**

1. Students will warm-up for 5 minutes on the track prior to their work-out. The warm-up will be led by your teacher. Instructions will be given on the track.

**Controlled Pace 400 Meter**

1. You will be placed in 1 of 2 running groups.
2. Start and finish lines will be explained by your teacher.
3. Each race will be started by your teacher.
4. The race should be run as a group, utilizing the pace set by your teacher. There is no prize for winning the race! Make sure to utilize the pace set by your teacher for the entire run.
5. Upon crossing the finish line, move to the side of the track and position yourself facing the football scoreboard.
6. Immediately begin taking your 0 min cardiac rate.
   1. A total of 4 cardiac rates will be taken at the following rest intervals:
      * + 0 min, 1 min, 3 min, and 5 min
        + Do not move while taking your cardiac rates
        + Record your data in the table provided
7. At the end of your 5 minute testing/resting period, relax and slowly make your way to the north end of the track for the 100 meter dash.

**100 Meter Dash**

1. Line up at the north end of the track in groups of 8. Each person should have their own lane.
2. Each race will begin on your teacher’s command. You must run the race **AS FAST AS YOU CAN!**
3. Upon crossing the finish line, move quickly OFF the track and position yourself facing the football scoreboard.
4. Immediately begin taking your 0 min Cardiac Rate.
   1. A total of 4 cardiac rates will be taken at the following rest intervals:
      * + 0 min, 1 min, 3 min, and 5 min
        + Do not move while taking your cardiac rates
        + Record your data in the table provided
5. At the end of your 5 minute testing/resting period, relax and complete a few static stretches on your own. If you need ideas, let us know.
6. On your teacher's command, return to the classroom and put your lab in the box.

**Data Table:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Cardiac Rates**  **Per Min.** | **O Min.** | **1 Min.** | **3 Min.** | **5 Min.** |
| **Resting** |  |  |  |  |
| **400 Meter** |  |  |  |  |
| **100 Meter** |  |  |  |  |

**Analysis Questions:**

1. Identify ONE pattern/trend in your individual data and support the pattern/trend with quantitative data. In your response, include the terms aerobic and anaerobic and how they relate to cellular respiration.
2. Evaluate your recovery rate data. Explain how your recovery rate relates to your overall cardiovascular fitness?
3. What can you do to improve your overall fitness? Be detailed.