**NAME: .**

****

**I want your BLOOD..........**

* **Adult Males have approximately.............................litres of blood.**
* **Adult Females have approximately .........................litres of blood.**

**Further elaborate on the *Functions of Blood* within the body:**

**Transport Wastes from Cells:**

**Protection against Infection:**

**Maintains Homeostasis:**

**Blood Clotting:**

**Transport to Cells: .**

**WHAT’S IN YOUR BLOOD!**

**Blood CONTAINS the following 4 things: (write a brief description/function of each):**

**1. Red blood cells -**  .

**2. White blood cells -** .

**3. Platelets –** .

**4. Plasma –**  .

BLOOD CONTAINS .................% PLASMA AND ................% BLOOD CELLS (rbc, wbc, platelets)

What is the function of *Haemaglobin? .*

**BLOOD VESSELS....**





***Complete the Cycle*** *of Blood around the body.......write a small description and function of each component.*







****

|  |  |  |
| --- | --- | --- |
| **VS.** | **Arteries** | **Veins** |
| **Transports blood (Away/Towards)** |  |  |
| **Blood (Oxygenated/De-oxygenated)** |  |  |
| **Wall Thickness (Thick/Thin)** |  |  |
| **Elasticity (Elastic/Flacid)** |  |  |
| **Valves ( Yes/No)** |  |  |
| **Pressure (High/Low)** |  |  |

***Blood flow in capillaries is controlled by , which can enable*** .

r e s p i r a t o r y s y s t e m

The Respiratory System consists of all the Pathways through which air travel travels to reach the lungs.

**Finish the sentence......** *“Basically, in a ‘nutshell’, the function of the Respiratory System is.....* .

**Describe the following parts of the Respiratory System in the Table below**

****

|  |  |
| --- | --- |
| 1. **Nasal passage** |  |
| 1. **trachea** |  |
| 1. **bronchi** |  |
| 1. **bronchioles** |  |
| **(e) alveoli** |  |
| **(f) diaphragm** |  |
| **(g) pleura** |  |
| **(h) ribs** |  |

**How we get into the blood!**

|  |
| --- |
| **The exchange of gases in the lungs takes place between which two structures?** |
| **&** |

**Q:** What is ***this section*** of the diagram showing?

**Answer**:

**Describe how pressure difference allows this to occur:**

**Q:** Describe what is occuring in the **Pulmonary Vein**?

**Answer:**

.

**Q:** Describe what is Occuring in the **Pulmonary Artery**?

**Answer:**

.

**Remember:** Gasses always move from areas of...................................pressure into areas of ............................... pressure

**Respiration** basically means = ............................................, while **"cellular respiration"**; refers to the gaseous exchange that takes place as unwanted carbon-dioxide is expelled through the cell walls and oxygen is diffused into the cell for energy purposes within the cell itself.

How does **cigarette smoke** affect the respiratory system? .

How does **asthma** affect the respiratory system? .

Describe (in sequence) how **O2**gets from the outside atmosphere to the working muscles; and how **CO2** gets from our muscles back to the outside atmosphere:

****Take a deep breath....

What is the **DIAPHRAGM?**

What are **‘hiccups’**, and how do they occur ?

.

Explain the term **‘being winded’** and how it happens?: .

Describe how **inspiration (breathing in) occurs: .**

Describe how **expiration (breathing out) occurs: .**

What does the term **VO2 Max** mean? .

What is **VO2 Max** a good indicator of?

What is the only accurate way to test **VO2 Max? .**

CHALLENGE:

If you have 20mL of O2 /100mL blood, and your muscles use 4.5mL O2.....Your **a-vO2 diff = .**

**LABORATORY – Heart Rate** Date: \_\_\_\_

**AIM:**

To record resting heart rate in various anatomical positions and compare with class.

**EQUIPMENT:**

* None needed.

**PROCEDURE:**

1. (In pairs) Record resting Heart Rate in the following positions:– *Get partner to take pulse while you time* (15sec X 4)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Laying** | bpm | **Sitting** | bpm | **Standing** | bpm |

|  |  |
| --- | --- |
| **CLASS RESULTS (Laying)** | |
| **Name** | **Heart Rate (bpm)** |
|  |  |
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1. Record Class Results for Laying in the table *(to the right)*
2. What is the Class Average? Bpm
3. What occured to your HR over the 3 positions?\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. What are some factors that can affect Heart Rate?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. What factors may have affected your Heart Rate?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Lance Armstrong, (7-time winner of the Tour de France) had a resting Heart Rate of 32 bpm. What does this indicate in terms of Heart Size, Cardiac Output? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Is your resting HR an accurate predictor of your VO2 max?

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**LABORATORY – Maximal O2 Uptake** Date: \_\_\_\_

**INTRODUCTION:**

Maximal oxygen uptake ( VO2 max. ) is the maximum rate at which oxygen can be consumed per minute, per kilogram of body weight.

**\* VO2 max. = Cardiac output X arteriovenous oxygen (a-vO2) difference.**

Maximal oxygen uptake is used as the most accurate measure of a person's aerobic power or fitness.

A higher VO2 max reflects an increased ability of the:

- heart to pump blood.

- lungs to ventilate large volumes of air.

- blood to transport oxygen.

- muscles to take up oxygen.

The most accurate tests to measure an individual's VO2 max. are conducted in the laboratory but a number of field tests have been developed for predicting VO2 max levels such as Cooper’s Twelve Minute Run

**AIM:**

To predict students' maximal oxygen uptake and compare results.

**EQUIPMENT:**

* Stop watches
* Cones
* Tape measure

**PROCEDURE:**

Cooper's Twelve Minute Run -

1. Measure a course by placing cones at ten metre intervals.
2. Each subject runs as far as they can in twelve minutes.
3. Record: (i) Distance covered.

(ii) VO2 max. ( ml/kg/min ) using the table supplied below.

**Record Results in Table Below**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Cooper’s 12 Minute Run (Class Results)** | | | | | |
| Name | Distance (m) | VO2 Max | Name | Distance (m) | VO2 Max |
| 1 |  |  | 12 |  |  |
| 2 |  |  | 13 |  |  |
| 3 |  |  | 14 |  |  |
| 4 |  |  | 15 |  |  |
| 5 |  |  | 16 |  |  |
| 6 |  |  | 17 |  |  |
| 7 |  |  | 18 |  |  |
| 8 |  |  | 19 |  |  |
| 9 |  |  | 20 |  |  |
| 10 |  |  | 21 |  |  |
| 11 |  |  | 22 |  |  |

**QUESTIONS:**

1. Graph the VO2 max scores for each subject below
2. Did you perform / score as well as you thought you would ? Why / why not ? .
3. From your general knowledge of each subject, did the expected fittest individuals score the highest VO2 max? Why / why not ?
4. Discuss other factors that could have influenced the scores gained in the test.
5. Discuss the advantages and disadvantages of the test.
6. Within the limits of the test situation, do you think it gave an accurate measure of VO2 max. ?

**CONCLUSION :**

1. Which athletes would you expect to have a high maximal oxygen uptake ?

2. Based on the results you obtained, which sport / event would each subject be best suited to in terms of aerobic

fitness and why ?

3. Outline a method which would provide a more accurate measure of VO2 max. Why is this test more accurate ?

**Extension Questions:**

1. **Why do trained athletes generally have a lower heart rate than untrained athletes?**
2. **What are the major differences between e cardiovascular systems of males and females?**
3. **Precapillary Sphinchters can save lives! - Discuss how.....**
4. **Which side of the heart is more muscluar and why?**
5. **What is ‘by-pass’ surgery in relation to the circulatory system?**
6. **In an emergency situation, what is the first substance to be replaced into the body and why?**
7. **What is a simple reason to explain why trained athletes generally have lower Heart Rates than untrained athletes?**