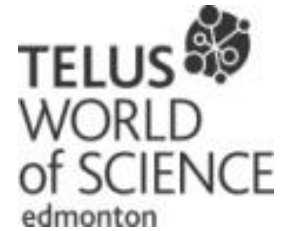


Health Gallery

Student Experience Guide Division II



The Heart and Circulatory System – How does exercise affect our heart rate and blood pressure? How can poor diet, smoking, lack of proper rest or substance abuse affect the health of the heart and circulatory system?

- Resting heart rate is usually determined when you wake up in the morning. At that time you find your pulse, measure it for 10 seconds then multiply by 6 to get your pulse rate per minute.
- For the sake of this activity we will call your resting heart rate the rate that you get when you are sitting.

1. Find the station called *See for Yourself-Blood Pressure*
2. Slip your arm into the blood pressure cuff and measure your resting heart rate and your blood pressure.

Resting heart rate _____ Systolic pressure _____ Diastolic pressure _____

3. Once you have recorded the above information write down what systolic and diastolic mean.

Systolic _____

Diastolic _____

4. Go to the bicycle in the station called the speed of life. Hop in the saddle of the bicycle and peddle rapidly until your heart rate **rises** by 30 beats per minute.
5. Get off the bicycle and immediately return to *See for Yourself – Blood Pressure* and re-measure your pulse, systolic and diastolic blood pressure. Exercise heart rate _____ Systolic pressure _____ Diastolic pressure _____
6. What other factors would affect your pulse and your blood pressure?

The Digestive System – How does food move through the digestive system? Why is the digestive system so long?

- The digestive system is a complex system composed of many thousands of fine fingers; up to 32 specialized elements composed of dentin, enamel and cementum all wrapped around a center of blood and nerves; potent chemicals and powerful muscles. WOW!
- In this section of your gallery discovery you will visit at several stations. There is no particular correct order to your investigations but you must complete the **Peristaltic Drag Race**.

1. Go to the display called *Peristaltic Drag Race*. Read the instructions carefully and consider the following question before you get started in your race with your partner.

Does the amount of muscle power you apply to pushing the balls through the sleeves affect the speed of movement through the sleeve?

Can the balls be moved through the sleeve without applying any muscle power?

2. Race your partner. As is true with any valid scientific investigation you should redo the race with partner trading sleeves through which they push the balls. Are the results the same? What factors tend to influence the outcome?

Why would food racing through your large intestine not be good for you?

What are the contractions called that move through the digestive system?

A doctor looked at this activity and said:

“I certainly hope that students do not get the impression that moving food through the large intestine is a race.”

Why do you think moving food through the large intestine should not be a race?

(Hint: food generally takes more than 4 hours to make through the large intestine)

Hearing and Balance – What body parts play a role in balance?

- Have you ever noticed that when you spin around you get dizzy? Have you ever wondered why? Why is it that some people can spin around and around and around and never seem to get dizzy?
 - Balance is the result of several parts of your body closely working together.
 1. Go to the panel *Hangs in the Balance*. In the first sentence, in the paragraph just above the umbrella, it states the names of the body parts responsible for balance. Name them below.
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2. Go to the panel called *Spin the Doughnut and Tip the Box*. Follow the instructions.

What does *Spin the Doughnut* demonstrate about how your balance is affected by spinning?

What does *Tip the Box* demonstrate about how your balance is affected by tipping backward or forward?

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3. Go to the pane called, **Balancing Act**. Do the boys or the girls in your class have better average balance. Do the activity once with your eyes open and once with your eyes closed. Record the length of time of time you were able to maintain your balance with your eyes open and with your eyes closed.

Eyes Open _____ Eyes Closed _____

4. Now you are ready to ride the triaxial trainer called **Tilt the World**. The purpose of a triaxial trainer is to provide people like astronauts and jet pilots with opportunities to train their bodies to flight in spinning and upside down conditions. How do you rate? Are you dizzy or can you walk a straight line?
5. Perhaps you would like to see how the triaxial trainer affects your blood pressure. How might the triaxial trainer affect a smoker or someone with a substance abuse problem?

Bones and Muscles - Why do we have bones? Are muscles there just to make us better athletes or dancers?

- Imagine how humans would be different without bones and muscles. Do those 206 bones and 656 muscles play an important role in your life?
 1. Go to the activity panel called **Test Your Strength**. Try your grip strength twice with each of your hands. When the light starts to drop that turn is over. Do you notice a difference between your right and your left hand?
 2. According to the circle called **When Things Go Wrong** why is it important to increase your overall strength when you are young?

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3. Go to the X-ray show. It is located in two places; the large X-rays on the wall and the Display table on the floor in front of it. Each X-ray shows a different medical circumstance. Answer the questions below (there may be more than one correct answer).

1. Which of the x-rays may be of someone who just got a new skateboard?

2. Which of the X-rays has been taken of a person who eats too much candy and drinks too many soft drinks?

3. Which of the X-rays shows someone who has probably been lifting too heavy loads without bending his or her knees?

4. This X-ray shows a disease that generally strikes older people, though anyone of any age may show early signs.
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The Brain and Senses– What makes the brain work?

- The brain is a complex organ that is responsible for stimulating all of the bodies actions and functions.
- The brain is composed of neurons through which tiny electrical impulses travel. These impulses are the triggers for the switches that enable you to perform the incredible range of actions and functions of which the body is capable.
- Each of us is born with over one hundred billion (100 000 000 000) brain cells but as adults we all begin to lose them through cell death at the rate of about eighteen million (18 000 000) cells per year.
 1. **Easy question.** How many brain cells would you lose in a week? _____
 2. **Hard question.** If we could live as long as we have brain cells, how old would we be when the final brain cell died? _____
 3. Go to the display called ***The Lion Tamer Reaction Timer***. Try your reaction time with each of the stimuli (light sound and touch) Determine which of the stimuli you want to begin the test
Light reaction _____ Sound Reaction _____ Touch Reaction _____
Is everyone the same? Do boys and girls have similar reaction time? Is one faster than the other? What other factors may affect reaction time?
- The skin on your finger tips is very sensitive and can be trained fairly quickly to read a collection of dots.
 1. Go the panel named ***Under Pressure*** and find out how the skin works to help us sense our world.

 2. Use the Braille alphabet to answer the riddle. Use the rectangle below to “write” your name in Braille.

3. Got the panel called ***The Warper***. The activity asks you to spin the disc and look at fro 20 seconds (try singing Twinkle, Twinkle Little Star). Whatever you look at after staring at the disc is supposed to appear to move. Is this true for you? _____
Even if it is not true why was it supposed to happen?

If it does not happen for you suggest reasons why it did not.

The Gallery of the Gross – Why are people so fascinated by the gases and fluids that almost everyone’s body produces?

- The body produces over ?????? fluids and ?????? gases.
 1. Go to *The Gallery of the Gross* and look at each of the displays.
 2. Which of the displays in this gallery you like the most? Explain why you like this display.

Best Display _____

I like this display best because... _____
