

**Purpose:** How the output of carbon dioxide is changed after exercise.

**Hypothesis:** There will be less carbon dioxide in your breath after exercise because you must take in more oxygen and your breath is shallower.

**Background Knowledge:** Cellular respiration is performed by all living organisms. It takes place in the mitochondria. Photosynthesis is performed by plant-like organisms. It takes place in the chloroplasts.

## Materials

- ❖ Test Tube
- ❖ 2 Hole Stopper
- ❖ Straw
- ❖ Distilled Water
- ❖ Bromothymol Blue
- ❖ Stop Watch
- ❖ stopper

## Procedure

- 1) Fill the test tube full 10 ml of distilled water.
- 2) Put about 20 drops of bromothymol blue into the test tube and shake it up for five to ten seconds with a stopper on.
- 3) Charlie M. will run from the South door to the North door and back three times.
- 4) He will blow into the test tube previously prepared until the water turns blue. The two holed stopper will be placed on. This will be timed.
- 5) He will wait for two minutes while Jacob S. and Andrew repeat steps 1-2.
- 6) Charlie M. will repeat step four.
- 7) We will record the times in our notebook.
- 8) Steps 1-7 will be redone using the same test tube. The only difference will be that our person we will experiment on will be Jacob S.
- 9) We will then compare the times on how long before the water turned blue after running and after resting.

## Data

	Jacob S.	Charlie M.
RESTED	11 seconds	8 seconds
AFTER RUN	13 seconds	10 seconds

**Conclusion:** After doing the experiment and looking at the results, our hypothesis was correct. Your breath gives out more carbon dioxide when you are rested than after exercising. Some improvements would be to have more time and have more people to test. In all, you really do give out more carbon dioxide when rested than after exercising.