



CALIFORNIA SCIENCE & ENGINEERING FAIR 2019 PROJECT SUMMARY

Name(s) Amogha Akkati	Project Number J1203
Project Title Effects of Exercise: Changes in Carbon Dioxide Output	
<p style="text-align: center;">Abstract</p> <p>Objectives My goal was understanding how carbon dioxide in your breath was affected when you did exercise and when you were calm. The question is what happens to carbon dioxide levels in exhaled air before and after physical exercise.</p> <p>Methods</p> <ol style="list-style-type: none">1. Fill one clear plastic bottle half full with distilled water and add one teaspoon of the 0.04% bromothymol blue solution to observe a green color.2. Cut about two inches from one side of the tube for the aquarium pump. Insert the safety valve in between both pieces of tube.3. Cut a two-inch piece off a straw. Use this as the outlet tube of the respirometer.4. Using the aquarium pump tube, the straw, and the modeling clay, set up the respirometer. Make sure that the inlet tube reaches all the way to the bottom of the bottle. The outlet tube should stay above the indicator solution.5. Fill the second bottle with the same amount of water as the first one and again add one teaspoon of bromothymol blue solution. Make sure the solution has the same color as the previous one and set the bottle aside as a control for color comparison.6. Use the Science Journal app to monitor the color change of the indicator solution. In this project, people can use the app to record the color change in the solution once the pH indicator turns from neutral to acidic. Open the Science Journal app on a phone and select the light sensor. Clearly label the experiment and recordings.7. Lean the phone against a box or books with the light sensor facing sideways towards the respirometer. Then place the respirometer in front of the light sensor. Put the flashlight in front of the respirometer so it shines through the indicator solution directly onto the light sensor. Do not move the flashlight or the phone while recording data.8. Confirm that the sensor readings are stable. Then, press the record button and take a deep breath; start exhaling through the inlet tube into the indicator solution for as long as it is possible. Try to exhale from the lungs and be careful to not block the sensor with the tube. Inhale through the nose when necessary, and then continue blowing into the solution.9. Stop recording once the maximum sensor readings level off and are stable for more than 15 seconds. The sensor readings should start to stabilize once the indicator solution has changed color from green to yellow.	
Summary Statement My project explains how exercise effects Carbon Dioxide output in exhaled air in different conditions using a respirometer.	
Help Received None. I designed, built, researched, and performed the experiments myself. My parents monitored me while I was doing this experiment.	