

Cellular Respiration Activity

Problem: How does exercise affect cellular respiration (production of CO₂)? Does gender have an effect on cellular respiration rates?

Hypothesis: If you increase the amount of exercise, then _____
 _____ because _____

I predict that girls/boys will have a higher rate of cellular respiration. (circle one gender)

Materials:

- | | |
|--------------------------|--------------------|
| 2 small test tubes | bromothymol blue |
| 10 ml graduated cylinder | 2 straws |
| test tube rack | clock or stopwatch |

Procedure:

1. Record your hypothesis, as to how exercise will affect your body's production of CO₂
2. Label two test tubes A and B. Put 10 ml of water and a few drops of bromothymol blue in each test tube. **(Bromothymol blue will turn from blue to yellow or green in the presence of carbon dioxide)**
3. When your partner says 'go', *gently* blow air through the straw into the bottom of test tube A.
CAUTION: Do not inhale through the straw! DO NOT blow so hard you splash the liquid everywhere!
4. Your partner will record the time it takes for the color to change.
5. Now jog in place for 1 minute and repeat steps 3 and 4 using test tube B.
6. Repeat the procedure letting the other person complete the activity.
7. When you have both finished with your activity, give your results to your teacher.

Data Collection:

Gender M or F (circle)	Time for solution to change color(sec)	Average Time for Girls (sec)	Average Time for Boys (sec)
Before exercise			
After exercise			

Data Analysis:

1. What process in your body produces carbon dioxide? _____
2. How does exercise affect this process? _____
3. What happens to the carbon dioxide you produce? _____
4. Does exercise affect cellular respiration in boys and girls differently? _____

Conclusion:

1. Address your hypothesis:
 How did exercise affect the time for the solution to change color? Boys vs. girls? _____

 Did these results support/reject your hypothesis? _____

