

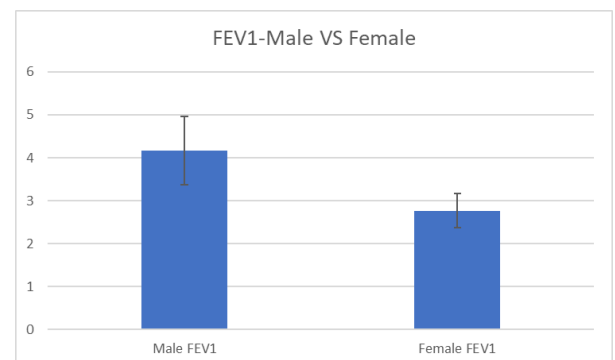
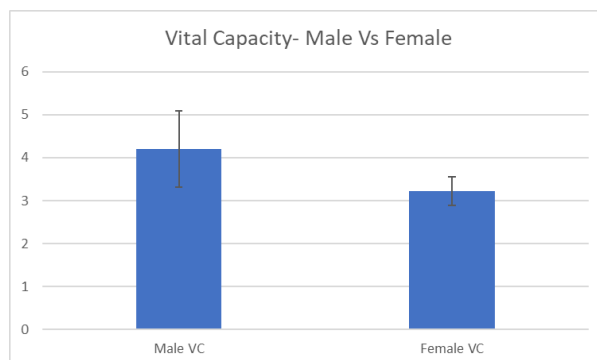
## LABORATORY 14 - 14-D: Incentive inspiratory devices

**Purpose:** The lab is all about checking how our lungs work using a cool machine called the Morgan ComPAS Pneumotrac (SVC). We'll use a spirometer and a computer program to measure things like how much air we breathe in and out. The experiment also shows us some gadgets like incentive inspiratory devices and portable spirometers. The data we collect, shown in a graph called the SVC Volume Time Curve, helps us understand how well our lungs are doing. It's like a fun way to learn about our breathing and how to read cool graphs!

### Procedures:

1. Prepare the Incentive Device:\*\*
  - Grab an incentive device and attach the disposable cardboard mouthpiece and white (or blue) filter to the breathing tube.
  - Use your hand to create the best seal possible, although it's not crucial to have a complete seal.
2. \*\*Take a Deep Breath:\*\*
  - Inhale as deeply as you can using the device.
  - Record the measurement provided by the device. The method might involve moving colored balls up plastic columns or adjusting bellows within a column, depending on the model.
3. \*\*Record and Dispose:\*\*
  - Note down your values.
  - Dispose of the disposable cardboard mouthpiece.
  - Put the filter in the designated tub labeled for disposal after use.

### Results:



## **Discussion:**

- Male VC: Average 4.9 liters (SD 0.565)
- Female VC: Average 4.0 liters (SD 0.929)

Forced Expiratory Volume in One Second (FEV1):

- Male FEV1: Average 4.45 liters (SD 0.509)
- Female FEV1: Average 3.49 liters (SD 0.634)

Males, on average, demonstrated higher VC and FEV1 compared to females. Standard deviations suggest more consistent values in males. These variations underscore the importance of gender-specific reference values in respiratory assessments, highlighting potential physiological differences. Further exploration into underlying factors influencing these distinctions is warranted for a comprehensive understanding of respiratory health.

## **Conclusion:**

In simple terms, our test showed that guys, on average, breathe in and out more air than girls. The numbers also suggest that guys are more consistent in their breathing. Knowing these differences is important when checking how our lungs are doing. It might be because guys and girls have different bodies. Exploring this more could help us understand how to keep our breathing in top shape.



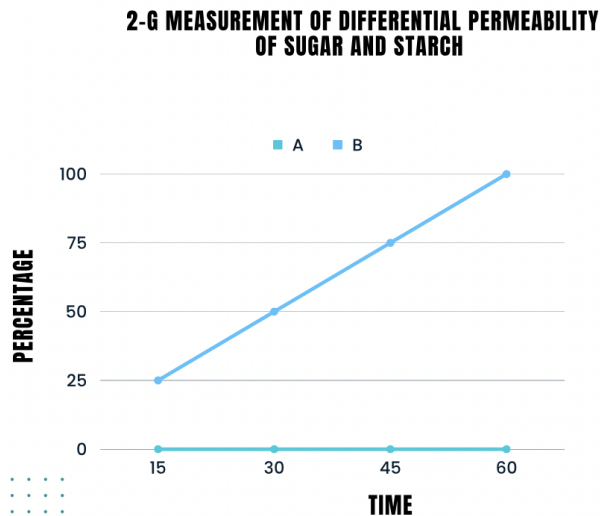








## 2-G Measurement of differential permeability of sugar and starch



Discussion: In conclusion, the series of experiments delved into fundamental biological processes, yielding valuable insights. The investigation of diffusion through liquids unveiled the temperature's impact on diffusion rates, with a constructed graph illustrating the relationship. Diffusion through agar highlighted the role of molecular properties in varying diffusion rates. The filtration experiment underscored how solution thickness affects filtration dynamics. Osmosis experiments provided a comprehensive view of water movement across membranes, emphasizing osmotic equilibrium. Differential permeability insights elucidated membrane selectivity. Lastly, the tonicity experiment demonstrated cellular responses to different solutions. Collectively, these experiments contribute significantly to understanding diffusion, osmosis, filtration,



and cellular behaviors under varying conditions, spanning implications across scientific, medical, and engineering domains.

Conclusion: In conclusion, the experiments delved into diffusion, osmosis, filtration, and tonicity. These investigations shed light on temperature's effect on diffusion, filtration dynamics, water movement in osmosis, and the impact of tonicity on red blood cells. Collectively, they provide valuable insights into fundamental biological processes and their underlying principles.