

LABORATORY 14 – RESPIRATORY PHYSIOLOGY

Casandra Ortega and Jasmin Villagomez

Purpose:

Using a spirometer measured our air intake. Oxygen is very important in daily lives and measuring it gave us an idea of our measurements. We compared to the rest of the class and plotted the average in order to see our class air intake. Analyzing the data helped us determine our average in vital capacity and FEV1 in male and female.

Procedures:

14-B: The Forced Vital Capacity (FVC) or Forced Expiratory Volume (FEV1) –Morgan ComPAS Pneumotrac

Procedure

1. The Morgan ComPASs computer program has already calculated and factored in the BTPS (Body Temperature Pressure Saturation) correction factor.
2. Fully insert the Pneumotrac Filter/mouthpiece you purchased at the bookstore. If you have difficulty keeping air from leaking through your nose, you may need to wear a nose clip, as air leakage will result in inaccurate results.
3. Be sure the correct student information is loaded up before you start the FVC test.
4. After starting the FVC test, follow the verbal instructions of your instructor: begin with your mouth off the mouthpiece so the pneumotach can equilibrate; after getting a good seal with your mouth, start with tidal breathing; when you're ready, take in the deepest breath possible, then forcefully blow out as fast as you can and keep squeezing until instructed to stop. The instructor will print out your "FVC Volume Time Curve"

14-C: Portable spirometry

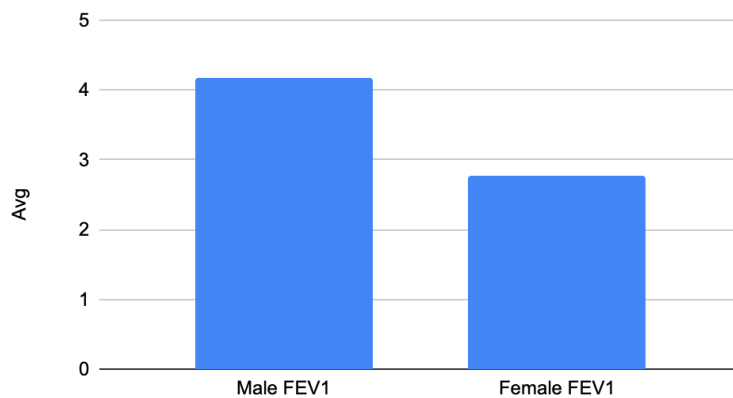
Procedure

1. Open the grey plastic box on your lap desk that says "BASELINE Lung Capacity Spirometer" on the lid. Inside the lid of the box is a white paper that has specific instructions, please read the whole inside page with "how to use."
2. Insert the clear plastic mouthpiece on the "Windmill-Type" spirometer and make sure the measurement indicator is at the zero position before beginning.

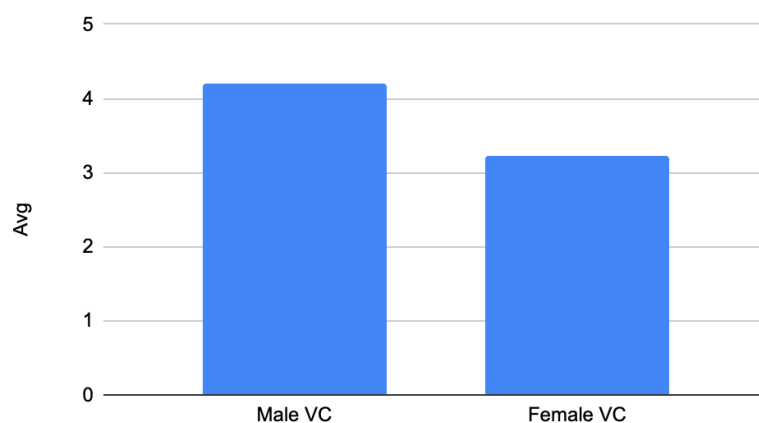
3. Make sure you only exhale into the spirometer, DO NOT inhale from it.
4. After exhaling, record the measurement from the spirometer. Be sure to place your used plastic mouthpiece in the correct tub after use (the tub is labeled).
5. Calculate your predicted vital capacity from the nomograms available in lab. Using a straightedge, make a line matching your height and age to the vital capacity prediction. Note that the VC is in liters whereas other measurements have been taken in milliliters.
6. Compare the values obtained from the portable spirometer, the predicted values from the nomograms, and the value obtained from the Koko spirometer, if available. How can you account for any differences? (NOTE: your predicted VC from the nomogram, and a comparison to the measured VC in 14-A should be included in your discussion of 14- A).

Results:

FEV1- Male vs. Female



Vital Capacity- Male vs Female



Discussion:

It was interesting to see a difference in males and females. We were not expecting a difference because we didn't know why there would be a difference, especially a bigger one at that. This

made us think about why there would be a difference. We concluded that it would be because males have bigger lungs from being “bigger” since females would be “smaller” with less rib cage space and hence smaller lungs. It was interesting to conclude and unexpected in our research.

Conclusions:

In conclusion, this data helped us conclude that the vital capacity for male and females was different. In male the average was 4.2 and female was 3.225. In FEV1, the average in male was 4.1675 and in females was 2.76667.