Laboratory 14 - Respiratory Physiology
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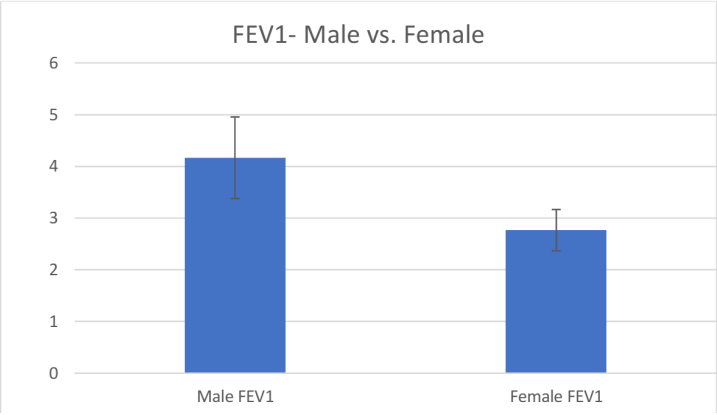
Purpose

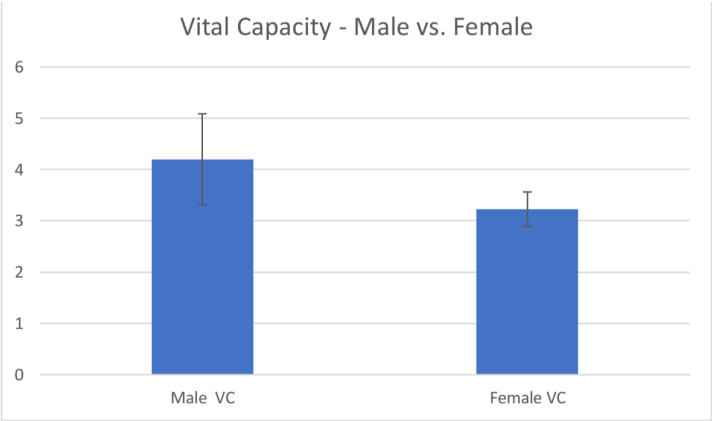
The movement of air in and out of the lungs is essential to maintain the important process of cellular respiration, the oxidation of nutrient molecules. The volumes of air involved in pulmonary ventilation may be measured with an instrument known as a spirometer. The spirometer is capable of measuring and recording several human lung capacities such as tidal volume and vital capacity. The purpose of laboratory fourteen is to be able to understand the function of the spirometer as well as to be able to record the lung volumes and capacities.

Procedure

For the first part of the lab professor Oak set up the comPas computer program, we began by making sure the correct student information was loaded up before starting the FVC test. After starting the FVC test the students began the test first with their mouth of the mouthpiece so the pneumotach can equilibrate, after getting a good seal w their mouth, they began with tidal breathing and when ready they took in the deepest breath possible, then forcefully blew it out as fast as they could and kept squeezing until unstructured to stop. After students got their graph with their curve. To calculate vital capacity for the FVC test we measured the height of the highest peak of the curve in mm and multiplied that length in mm by 66.67 ml/mm. Then rounded off ml to whole numbers. For the second part of our lab seven students inserted a clear plastic mouthpiece on the “Windmill-type” spirometer and made sure the measurement indicator was at zero before beginning. After exhaling, the students recorded the measurement from the spirometer. Make sure you only exhale into the spirometer, do not inhale from it. We then calculated our predicted vital capacity from the nomograms available in the lab. Using a straightedge, we made a line matching our height and age to the vital capacity prediction. After each student got their results we made a table comparing males vs females and then made a chart to visualize

Results





Discussion

Overall I enjoyed laboratory fourteen because prof oak explained it all very well to us. We were able to calculate the TVC and vital capacity for seven students and analyze and compare the difference between males and females. Males overall had a higher vital capacity as females as well as a higher forced capacity. This did surprise me a little because I didn't think there would be much of a difference. I also enjoyed learning how to use the spirometer which we used to calculate our vital capacity, the instructions on how to use it were pretty straight forward we just had to exhale into the spirometer and then record the measurement. An experimental error that may have occurred is that some students may have been inhaling into the spirometer instead of exhaling into it.

Conclusion

Overall, in laboratory fourteen we were able to calculate our vital capacity and our forced vital capacity. A forced vital capacity test is important in that it measures the rate at which air is expelled from the lungs. Vital capacity is the total air that the lungs contain.We used a spirometer to calculate our vital capacity. A portable spirometer enables the healthcare professional to measure a person's vital capacity when computer technology is not available. For a spirometer to work you only need to exhale into it which then should give your results.