

Week 9 Post-Lab

BIOE 320 Systems Physiology Laboratory

A student wanted to test for statistical differences in the maximum oxygen consumption (VO_2) of people with different activity levels. They collected VO_2 data immediately after vigorous exercise from 15 total healthy men between 20-29 years of age. The test subjects were divided into 3 groups: those averaging less than 2 hours of exercise per week, those averaging between 2 and 6 hours of exercise per week, and those averaging more than 6 hours of exercise per week. The resulting data can be found [here](#). The VO_2 is reported in metabolic equivalents (METS, $3.5 \text{ mL O}_2/\text{kilograms (kg)} \times \text{minute}$). Conduct the necessary statistical test to discern the differences between the groups.

1. What type of ANOVA should be used? Be as specific as possible.
2. Perform your indicated choice of ANOVA and report the F-statistic and p-value. State your conclusion(s) based on your calculations. Show and/or describe all work.
3. Perform Tukey's HSD test on the data to determine individual differences between groups. State your conclusion(s) and show/describe all work.
4. What is the difference between the conclusions drawn from your choice of ANOVA and the conclusions drawn from Tukey's HSD test?