Lab 05

Download the `lab05.Rmd` file and open it using RStudio. Then, use the R programming language to help you answer the questions below. **Don't forget to fill out the worksheet form before the next class!**

For this lab we are going to look at a recent article (Published in February 2018) titled "Acute Lateral Ankle Sprain Prediction in Collegiate Women's Soccer Players" and published in the *International Journal of Sports Physical Therapy*. Open a copy of the article through the following link:

`https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5808007/`

And answer the following questions (only some are about this paper).

1. There are a number of statistical tests in this paper, but we are going to restrict ourselves to the results in Table 3 and Table 4. Read the abstract as best you can and look at the contingency table given in Table 3. Would you classify this as an experimental or observational design? Why?

2. Read the conclusion of the paper. Do the authors correctly interpret the results in terms of causality? In other words, do they incorrectly assign a causal relationship under data collected through an observational study?

3. Create a tabular dataset corresponding to the results in Table 3, saving the file in a CSV or Excel format.

4. Read the dataset into R and run Fisher's Exact Test. What are the null and alternative hypothesis in this statistical inference test? Does your p-value match that given in the paper?

5. Now apply the chi-squared test and the Z-test for proportions. How do these test p-values compare to the Fisher's Exact test?

6. Given the experimental design, which of the three tests that we have actually seem the most applicable?

7. Explain how publication bias may effect your ability to trust the results of this study.

8. Repeat steps 3-5 for the results in Table 4. Do the tests give reasonably similar p-values?

9. Think back to the first week of class. Can you recall one student dataset that was observational and one that was experimental? If not, try to devise a data collection scenario that matches the missing type.