

Homework 3

Twenty participants diagnosed with tendonitis of the elbow (tennis elbow) were assigned to one of four conditions: (1) Physical therapy (2) no-treatment control (3) drug therapy (4) placebo. Participants gave a rating of pain from 1 (very low) – 10 (very high) and a measure of mobility 1 (very low) – 10 (very high). Mobility was defined as the range of motion before the maximum pain was present. The dependant measure (*improve*) was whether or not improvement was shown by the participants in their pain and mobility after treatment.

Using the **Dataset 3.1** under the heading homework 3 please answer the Questions presented below. Except for questions 2 and 4, present your findings for each question in a summary paragraph using APA format. Assume alpha levels of .05 for all significance tests. Please print out and turn in all outputs.

1) Conduct a chi-square test of independence to answer the following:

- a. Is there a significant relation between *condition* and *improvement* shown by participants after therapy?
- b. What is the probability that subjects in general reported improvement?
- c. Given that participants received physical therapy what is the probability that they improved?

2) Create a bar graph to show improvement by condition.

3) Conduct a chi-square test of independence to answer the following:

- a. Is there a significant relation between *gender* and *improvement*?
- b. Are males or females more likely to improve after treatment?
- c. Report the strength of the association.

4) Create a new variable labeled “therapy” that collapses condition into two categories:

- a. “therapy=1” which will consist of “behavioral therapy” and “drug therapy”
- b. “no therapy=2” which will consist of “no treatment control” and “placebo”

5) Conduct the appropriate t-test to answer the following: Do participants in the two groups, “therapy” vs. “no therapy” significantly differ on ratings of pain? Create a 90% confidence interval. Calculate (by hand) the effect size using Cohen’s d.

6) Conduct the appropriate t-test to answer the following: Do the two groups significantly differ on ratings of mobility? Follow same procedures as in question 5.

7) Researchers noticed that participants receiving drug therapy had pain ratings that were lower than expected. People taking this particular drug are known to have a population mean of 2.35 for ratings of pain. Conduct the appropriate t-test to answer the following: Do participants receiving drug therapy in this study report significantly lower levels of pain than the population?

8) Test whether males report significantly less pain than females and report your findings. Report the effect size.