

Stat 185 - In class problems

Wednesday, September 27

1. A study that surveyed a random sample of otherwise healthy high school students found that they are more likely to get muscle cramps when they are stressed. The study also noted that students drink more coffee and sleep less when they are stressed.
 - (a) What type of study is this?
 - (b) Can this study be used to conclude a causal relationship between increased stress and muscle cramps?
 - (c) State possible confounding variables that might explain the observed relationship between increased stress and muscle cramps.
2. In another study evaluating the relationship between stress and muscle cramps, half the subjects are randomly assigned to be exposed to increased stress by being placed into an elevator that falls rapidly and stops abruptly and the other half are left at no or baseline stress.
 - (a) What type of study is this?
 - (b) Can this study be used to conclude a causal relationship between increased stress and muscle cramps?
3. A researcher is interested in the effects of exercise on mental health and he proposes the following study: Use stratified random sampling to ensure representative proportions of 18-30, 31-40 and 41- 55 year olds from the population. Next, randomly assign half the subjects from each age group to exercise twice a week, and instruct the rest not to exercise. Conduct a mental health exam at the beginning and at the end of the study, and compare the results.
 - (a) What type of study is this?
 - (b) What are the treatment and control groups in this study?
 - (c) Does this study make use of blocking? If so, what is the blocking variable?
 - (d) Comment on whether or not the results of the study can be used to establish a causal relationship between exercise and mental health, and indicate whether or not the conclusions can be generalized to the population at large.