

Do these on a separate sheet of paper.

1. Does taking aspirin help protect people against heart attacks? A study looked at the effects of two drugs: aspirin and beta carotene. The body converts beta carotene into vitamin A, which may help prevent some forms of cancer. The subjects were 20,000 male physicians who are used to test the effects of aspirin and beta carotene. The subjects were ask to either take the aspirin, beta-carotene, both, or a placebo.

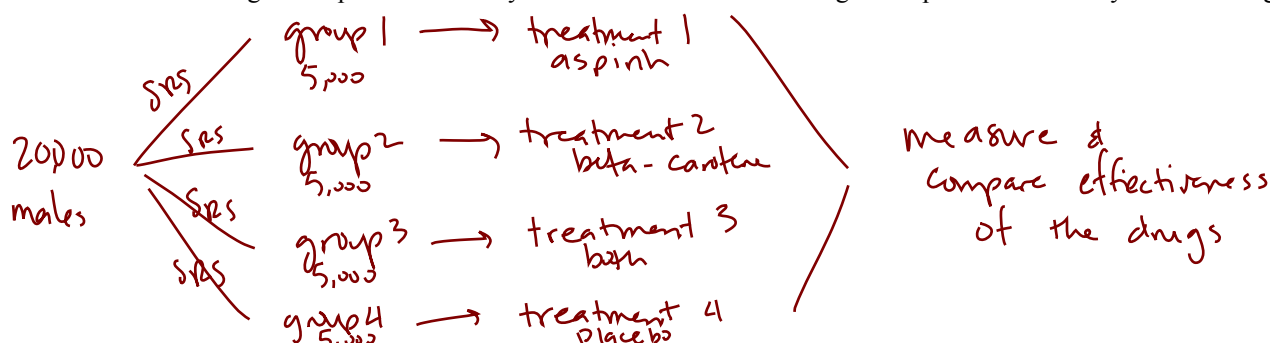
a. What are the factors?

The drugs

b. What are the treatments?

There are four treatments: ① Aspirin ② Beta-carotene
③ both aspirin & beta-carotene ④ placebo

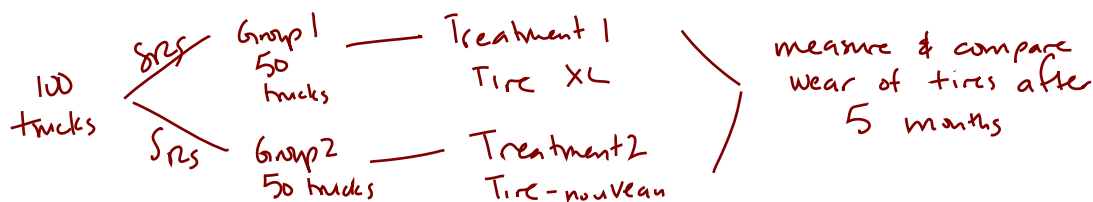
c. Design an experiment to carry out the effects of the two drugs. Keep in mind that they will be taking two pills.



d. Could we use a double-blind experiment here? Why or why not?

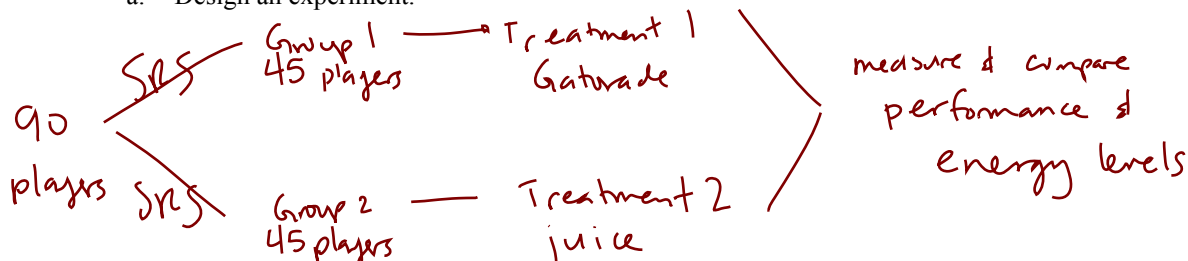
Yes, double-blind could be used in this experiment b/c the subjects and the physicians examining them could both be unaware of their treatment type (aspirin, beta-carotene, etc.), thus making the experiment double-blind.

2. Standard Tire Company has two new brands of tires for trucks. These two tires, Tire XL and Tire-nouveau are the same size and are designed for improved traction control on the front tires. The company is interested in how well the tires hold up in the wet season. After a 5-month period of time (Nov-March), the tires will be returned to the company for inspection on wear of the tires. Describe a design for this experiment that uses 100 trucks. Include a few sentences on how it will be implemented.



3. The football team at State University wants to know if drinking Gatorade or juice has any affect on performance and energy levels? The staff has 90 players on the team and wants to see if the effects of Gatorade and juice.

a. Design an experiment.

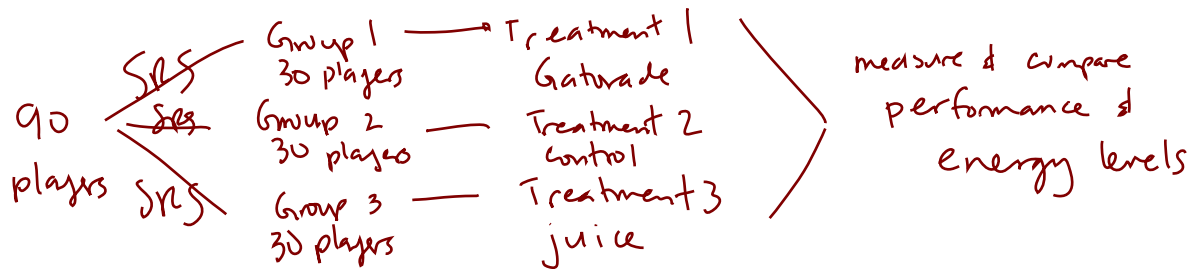


b. The coach for the punters and the kickers wants to continue giving all his players Gatorade. Give an example of a problem that might arise if this is permitted. Explain why random assignment would address this problem.

A problem that may arise is that the punters and kickers may have more energy than all the other players b/c they tend to not be involved in many plays, thus making it appear that Gatorade is better for performance & energy levels. Randomly assigning will ensure that not all punters & kickers end up in the same treatment group.

- c. How would a control group provide info about the effectiveness of these two drinks (Gatorade, Juice)? What would that design look like?

Including a control group will provide a basis for comparison



4. Suppose the *Palo Alto-Times Dispatch* asks a sample of 150 Palo Alto residents their opinions on the quality of life in Palo Alto.
- a. Is this study an experiment? Explain why or why not.

No, survey → observational study. No treatment imposed.

- b. Identify the sample and the population in this study.

Sample → 150 Palo Alto Residents Population → Palo Alto Residents

5. For the upcoming homecoming lunch activity you find 12 volunteers to participate in the game. You need to randomly assign them to two teams (6 people in each team).

- a. Explain briefly how you would randomly assign them to the two teams.

* Assign a number from 01-12 to every volunteer * The first 6 volunteers are in group A
 * Use random # table to select 2 digit #s * The next 6 volunteers are in group B
 * Ignore repeats. * Stop once 6 players are selected.

- b. Carry out your randomization using the given number table. Make sure to clearly identify who is specifically in each group. Make sure it is also clear how the numbers help you choose who is in which group.

01 02 03 04 05 06 07 08 09 10 11 12
 Phil, Chris, Daisy, Claudia, Josh, Dave, Danny, Peter, Amelia, Jeanne, Rajeev, Stephanie.

Group A [Daisy, Rajeev
 Jeanne, Amelia
 Danny, Dave] Group B [Phil, Josh
 Chris, Peter
 Claudia, Stephanie]

14459 26056 31424 80871 65103 62253 50490 38167 98532 62183 70632 23417 26185 41448
 75532 95857 0708 87664 92099 58806 66979 98624 84826 71487 09984 29077 14863 61683
 47052 65858 64751 12574 43587 95878 65447 12134 15784 02152 04005 15487 36587 68618
 46842 42157 65971 41335 11528 21310 54712 26578 01245 12465