F.R.A.P.P.Y!

(See apstatsmonkey.com for more FRAPPY's)

As dogs age, diminished joint and hip health may lead to joint pain and thus reduce a dog's activity level. Such a reduction in activity can lead to other health concerns such as weight gain and lethargy due to lack of exercise. A study is to be conducted to see which of two dietary supplements, glucosamine or chondroitin, is more effective in promoting joint and hip health and reducing the onset of canine osteoarthritis. Researchers will randomly select a total of 300 dogs from ten different large veterinary practices around the country. All of the dogs are more than 6 years old, and their owners have given consent to participate in the study. Changes in joint and hip health will be evaluated after 6 months of treatment.

(a) What would be an advantage to adding a control group in the design of this study?

E P I

(b) Assuming a control group is added to the other two groups in the study, explain how you would assign the 300 dogs to these three groups for a completely randomized design.

E P I

(c) Rather than using a completely randomized design, one group of researchers proposes blocking on clinics, and another group of researchers proposes blocking on breed of dog. How would you decide which <u>one</u> of these two variables to use as a blocking variable?

E P I

TOTAL: ____ / 4

Student Responses for 2007 #2: Dogs' Hip Health

"Spencer:"

(a) What would be an advantage to adding a control group in the design of this study?

An advantage to adding a control group to this design would be that it gives the experiment something to compare its results to, to see how much of a difference the treatments make.

(b) Assuming a control group is added to the other two groups in the study, explain how you would assign the 300 dogs to these three groups for a completely randomized design.

For every dog that is chosen roll a die. IF the die is a 1 or 2 give the dog the glucosamine. IF the die is a 3 or 4 give the dog the chondroitin. IF the die is a 5 or 6 put the dog in the control group. This will completely randomize the design.

(c) Rather than using a completely randomized design, one group of researchers proposes blocking on clinics, and another group of researchers proposes blocking on breed of dog. How would you decide which <u>one</u> of these two variables to use as a blocking variable?

I would decide to use the blocking on breed of dog. The clinic the dog is in should not affect the medicine the dog is given. However, different breeds of dogs might respond to the medicines differently. Therefore, the blocking on breed of dog should be used.

"Katilyn:"

(a) What would be an advantage to adding a control group in the design of this study?

The advantage to adding a control group in the design of this study would be to have something to compare the results to. This helps to reduce the effects of confounding variables. For example the weather which can affect joint pain.

(b) Assuming a control group is added to the other two groups in the study, explain how you would assign the 300 dogs to these three groups for a completely randomized design.

To obtain a compleatly randomized design I would number each dog 1 to 300 and then using a random number generator I would select 100 numbers ignoring repeats the 100 dogs corresponding to those 100 numbers will be placed in the first treatment group and will recieve glucosamine. I will repeat this process selecting 100 new numbers, these 100 dogs will be placed in the second treatment group and will recieve chondroitin and the remaining 100 dogs will be the control group and will recieve a placeb.

(c) Rather than using a completely randomized design, one group of researchers proposes blocking on clinics, and another group of researchers proposes blocking on breed of dog. How would you decide which <u>one</u> of these two variables to use as a blocking variable?

Whichever variable has more variation should be used as a block. I think breed of dog will cause more variation in the experiment because different kinds of dogs can respond differently to the treatment, but which clinic the dogs came from probably will have less effect on the experiment.

"Briton:"

(a) What would be an advantage to adding a control group in the design of this study?

It would be an advantage to add a control group to this study because then after 6 months, you have a group to compare with the treated dogs in the study, to see if the treatments really had an impact in promoting joint and hip health and reducing the onset of canine osteoarthritis.

(b) Assuming a control group is added to the other two groups in the study, explain how you would assign the 300 dogs to these three groups for a completely randomized design.

For a completely randomized design, I would assign each of the 300 dogs a number, 1-300, and then put all the numbers into a hat. Then draw 100 numbers out of the hat and assign them to group 1, the control group. Then pull out 100 more numbers and assign them to group 2, the glucosamine treatment. Then with the 100 left over dogs assign them to group 3, for the chondroitin treatment. That way, you will have three groups for a completely randomized design.

(c) Rather than using a completely randomized design, one group of researchers proposes blocking on clinics, and another group of researchers proposes blocking on breed of dog. How would you decide which one of these two variables to use as a blocking variable?

Rather than using a completely randomized design, I would encorporate blocking on the specific breed of dog, because the different treatments could possibly have a different effect on the different types of dogs, therefore I would use the blocking on breed of dog so it would eliminate any variables that could change the actual data. I would rather block on breed of dog than clinic, because breeds of dogs seem to be much more different than different clinics, therefore I would block on breeds of dogs.

FRAPPY! (Dogs) Student Samples' Scores:

"Spencer" PEP=2 (no context in (a), and in part (c), did not answer the key question: "Which variable has the strongest association with joint and hip health?")

"Kaitlyn" EEE=4

"Briton" EEP=3 (Part (c) stated "eliminate all variables," which is a false statement.)