Scenario based on recent research on the relationships between fitness, fatigue and quality of life

Subjects: 277 volunteers who have completed chemotherapy for cancer

Part 1: Three variables for each volunteer:

Cardiovascular fitness, measured by a maximal exercise test,

Fatigue, measured by the Multidimensional Fatigue Inventory,

Quality of life, measured by the Cancer Treatment Quality of Life Questionaire

**Fatigue and Quality of life:**



estimated slope: -0.447, 95% ci: (-0.84, -0.05) p-value: 0.027

Questions: Which conclusions are appropriate?

1: There is a negative association between fatigue and quality of life: Appropriate or Not (A or N)

2: Decreasing fatigue improves your quality of life: Appropriate or Not (A or N)

**Fitness and Quality of life:**



estimated slope: -0.77 95% ci: (-17.0, 15.0) p-value: 0.93

Questions: Which conclusions are appropriate?

3: There is no association between fitness and quality of life: Appropriate or Not (A or N)

4: There is no evidence of association between fitness and quality of life: Appropriate or Not (A or N)

Part 2: The data in part 1 were collected after randomly assigning volunteers to two treatments:

exercise: 12 weeks of an intensive exercise program

wait-list: nothing for 12 weeks, then start the exercise program

Volunteers can be considered a random sample of cancer patients in the Netherlands.

The fitness, fatigue and quality of life data were collected at 12 weeks.

**Quality of life and Treatment:** 

Treatment averages: wait list: 74.6, exercise: 80.4, estimated difference: 5.8 points.

95% ci for difference: (2.0, 9.5) p-value: 0.0024

95% prediction interval for increase in quality of life with exercise: (-22.3, 33.8)

Questions:

5. The exercise treatment increased quality of life by an average of 5.8 points. Appropriate? (A or N)

6. These data are paired, Yes or No? (Y or N)

7. If all hospitals in the Netherlands adopt the exercise program, the appropriate interval describing the average increase in quality of life is: A: (2.0, 9.5) or B: (-22.3, 33.8)

8. A doctor counseling a patient might tell her that the average increase in quality of life is 5.8 points but individual results range from A: 2.0 to 9.5 or B: -22.3 to 33.8.

**Hand grip strength and treatment:**



Treatment averages: wait list: 34.7, exercise: 36.0, estimated difference: 1.3 points.

95% ci for difference: (-1.1, 3.8) p-value: 0.28

Questions:

9. There is no difference in mean hand grip strength. Appropriate or not? (A or N)

10. If we got five times as many volunteers, the spread shown in the boxplot will be smaller. (T or F)

11. If we got five times as many volunteers, the se bars (right plot) will be shorter (T or F)