Validity and Reliability Assignment

Use the data provided in sheet 1 and 2 of the “Validity and Reliability Assignment Data” to answer the following questions. Provide your answer directly beneath the question. Please **bold** your answer.

1. You attempted to develop a more accurate field measure of VO2max via a 1.5 mile run (the novel test). You took a sample of 30 people and had them complete a 1.5 mile run and a VO2max test using a metabolic cart (the criterion test). You then developed a regression equation where you could estimate someone’s VO2max from their time, sex, and BMI. To assess the validity and reliability of your equation you cross-validated it in a sample of 15. The cross validation included test-retest reliability of the estimated VO2max values (from two 1.5 mile run trials) and a VO2max test using a metabolic cart. Use the data provided in the excel sheet to answer the questions below.
2. What is the SEM of the novel test?
3. Calculate the 95% confidence intervals for the standard error of the measure for an individual with a predict VO2max of 53.6. What does this mean?
4. Run a Bland-Altman Analysis in excel using the Trial 2 measure and the criterion measure of VO2max. Copy and paste (select the paste as picture option) your Bland-Altman plot. What is the mean bias (difference) and upper and lower limits of agreement?
5. Is our test valid and reliable? Why or why not?
6. You were not satisfied with the diagnostic accuracy of tests used to assess ACL tears, so you developed your own. You took a sample of 15 people (generally it would be a way larger sample) from a sports medicine clinic complaining of knee pain. You put them through your test on two separate occasions and either determined if they had an ACL tear (1) or did not have an ACL tear (0) based upon the outcome of your test. You then had them go in for an arthroscopic evaluation (gold standard) to determine if they truly did have an ACL tear. Use the data provided in the excel sheet to answer your questions below.
7. Please fill out the table below to assess the test-retest reliability of your test.

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | Trial 1 | |
|  |  | Torn (1) | Not Torn (0) |
| Trial 2 | Torn (1) |  |  |
| Not Torn (0) |  |  |

1. What is the proportion of agreement between trial 1 and trial 2 of your test?
2. Please fill out the table below to assess the agreement between the results of trial 2 and the criterion measure.

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | Arthroscopic Evaluation | |
|  |  | Torn (1) | Not Torn (0) |
| Novel Test Trial 2 | Torn (1) |  |  |
| Not Torn (0) |  |  |

1. Calculate the validity coefficient, sensitivity, and specificity of the test. What do each of these mean?
2. Based upon your results, would you say that this is a valid and reliable test? Why or Why not?