

Paired Sample T-test, Method 2

Objective: Compare means between two dependent samples.

A researcher is interested in the effectiveness of a new drug to reduce LDL levels in men with high cholesterol. LDL levels of participants will be measured at the start of the study and after 3 months. A reduction of LDL level of 0.3 would be considered a clinically-meaningful change. From pilot data, the standard deviation of the change in LDL levels is about 0.77. Power of 90% with a significance level of 5% is desired for the test.

Required Information	Inputs
What is the desired power for the test?	90%
At what significance level do you want to test your hypothesis?	5%
What difference do you want to be able to detect?	0.3
What is the standard deviation of the change in the response variable?	0.6
Is your hypothesis one-sided or two-sided?	Two-sided

The screenshot shows the G*Power 3.1.9.2 interface. The main window displays the following analysis results:

```

[1] -- Wednesday, December 23, 2015 -- 07:49:49
t tests - Means: Difference between two dependent means (matched pairs)
Analysis: A priori: Compute required sample size
Input: Tail(s) = Two
      Effect size dz = 0.3896104
      α err prob = 0.05
      Power (1-β err prob) = 0.9
Output: Noncentrality parameter δ = 3.3059539
        Critical t = 1.9939434
        Df = 71
        Total sample size = 72
        Actual power = 0.9033626
    
```

Callouts in the image provide the following information:

- Left Callout:** Select "t tests" and "Means: Difference between two dependent means (matched pairs)"
- Bottom-Left Callout:** Use "Determine=>" to get effect size.
- Bottom-Right Callout:** "Determine=>" pulls up this side bar
- Right Callout:** Mean difference to detect and SD of the difference

The side panel shows the following input parameters:

- From differences (selected):** Mean of difference: 0.3, SD of difference: 0.77
- From group parameters:** Mean group 1: 0, Mean group 2: 1, SD group 1: 1, SD group 2: 1, Correlation between groups: 0.5

Buttons at the bottom include "Calculate", "Calculate and transfer to main window", and "Close".

A total sample size of 72 is needed.