

Instructions for carrying out statistical procedures and tests using Minitab

These instructions are closely linked to the author's book:

Essential Statistics for the Pharmaceutical Sciences
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For all references to chapters or tables, see the above book.

**Using Minitab to obtain necessary sample size
for a two-sample t-test**

Using Minitab to obtain necessary sample size for a two-sample t-test

Example: Section 8.3.6 Sample size for study on effect of rifampicin on theophylline clearance

Follow the menus:

Stat / Power and Sample Size / 2-Sample t ...

You will be presented with three boxes labelled 'Sample sizes', 'Differences' and 'Power values'. All you have to do is fill in any two of these and Minitab will calculate the appropriate value of the third.

- Sample sizes: This is the one we want to calculate, so leave it blank.
- Differences: - This is the experimental effect to be detected. We decided we wanted to be able to detect a change in clearance of 0.13 ml/min/kg, so enter 0.13
- Power values: We want 80% power, but you should enter this as 0.8, not 80.

Finally, there is a box labelled 'Standard deviation:' This is where we enter the SD, which we anticipate as 0.25ml/min/kg. Enter 0.25 and click OK.

The output should then be:

Power and Sample Size			
2-Sample t Test			
Testing mean 1 = mean 2 (versus not =)			
Calculating power for mean 1 = mean 2 + difference			
Alpha = 0.05 Assumed standard deviation = 0.25			
	Sample	Target	
Difference	Size	Power	Actual Power
0.13	60	0.8	0.806465
The sample size is for each group.			

The bottom four lines include the important bits. You are advised to use a sample size of 60 subjects. It is obviously only possible to use exact whole numbers of subjects – fractional patients are impossible (Unless some terrible accident has occurred). Generally, no exact number of subjects will provide precisely 80% power, so Minitab reports the smallest number that will provide at least that much power. That is why it reports the 'Target' and the 'Actual' power. Sixty subjects will provide 80.6% power if the mean effect on clearance turns out to be a change of exactly 0.13 ml/min/kg and the SD is exactly ± 0.25 ml/min/kg.

Remember that you will need 60 controls and 60 treated subjects plus some allowance for possible drop outs from the experiment.