

# 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  
John Wiley & Sons Ltd <http://eu.wiley.com>  
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For all references to chapters or tables, see the above book.

## **Using Minitab to perform a paired t-test**

## Using Minitab to perform a paired t-test

### Example: Table 12.1 Effects of an alleged weight reducing drug on subjects' weights

Although a paired t-test is based upon the individual changes in a measured value, the easiest way to perform the test in Minitab is to enter both original sets of observations and then call up a paired t-test. Minitab will calculate the individual changes for you and then carry out the test based upon these values.

Label columns 1 and 2 as 'Placebo' and 'Active' and enter the subjects' weights into the two columns. It is vital that each row contains weighings for the same patient.

Follow the menus *Stat / Basic Statistics / Paired t ...*

It is then best to enter 'Active' as the First sample and 'Placebo' as the second. That way, where a subject loses weight with the active treatment, the change will be recorded as a negative value.

The output is then:

Paired T-Test and CI: Active, Placebo				
Paired T for Active - Placebo				
	N	Mean	StDev	SE Mean
Active	30	112.467	10.433	1.905
Placebo	30	116.083	8.938	1.632
Difference	30	-3.61667	4.78367	0.87337
95% CI for mean difference: (-5.40292, -1.83041)				
T-Test of mean difference = 0 (vs not = 0): T-Value = -4.14 P-Value = 0.000				

The key line (penultimate) tells you that the 95% CI for the mean weight change is  $-5.40$  to  $-1.83$ kg. As this range excludes zero, there is significant evidence that the drug does cause weight loss.

The P value on the last line (Apparently 0.000, but which should be reported as  $<0.001$ ) confirms the significance of the results.