

The two-sample  $t$ -test (also known as the independent samples  $t$ -test) is a method used to test whether the unknown population means of two groups are equal or not.

For the two-sample  $t$ -test, we need two variables. One variable defines the two groups. The second variable is the measurement of interest.

We need to check:

The data values are independent. The body fat for any one person does not depend on the body fat for another person.

We assume the people measured represent a simple random sample from the population of members of the gym.

We assume the data are normally distributed, and we can check this assumption.

The data values are body fat measurements. The measurements are continuous.

We assume the variances for men and women are equal, and we can check this assumption.