



- Effects of an independent variable that causes short-term effects

- Differences between separate groups
- Effects of an independent variable that may cause permanent changes or very long-term effects
- Experiment that may be terminal for animal subjects

For example:

- elderly versus young
- males versus females
- drug that cures a disease, a learning effect, physiological adaptation to chronic endurance exercise training
- mice and rat study where animals are sacrificed to harvest organs and tissues for analysis

Use treatment order control/crossover experimental design: each subject or participant will experience all conditions

Use control group experimental design: each subject or participant will only experience one condition

How many conditions are you testing?

Two

Three or more

How many experimental groups do you have?

Two

For example:

- placebo, 100 mg caffeine and 200 mg caffeine

For example:

- placebo and 100 mg caffeine

For example:

- placebo, low-dose drug that has long-term effects and high-dose drug that has long-term effects; or
- no fine-motor practice, low-volume fine-motor practice and high-volume fine-motor practice

For example:

- males and females, or
- untrained and trained

- All participants will experience the same experimental conditions, but in different order
- Use a 1-factor correlated samples ANOVA to analyse your results

- All participants will experience the same experimental conditions, but half in reverse order
- Use a paired t-test to analyse your results

- Create balanced groups if the study population has variation in terms of the dependent variable
- Use a 1-factor independent samples ANOVA to analyse your results

- Create balanced groups if the study population has variation in terms of the dependent variable
- Use an independent t-test to analyse your results