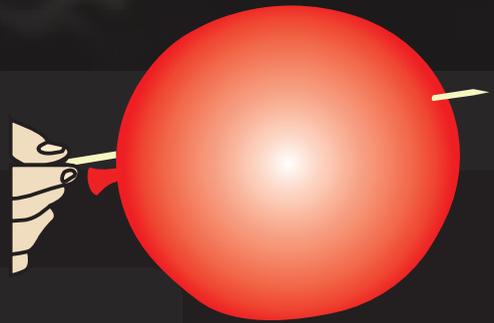


# SCIENCE SHOW OFFS

## SKEWER THROUGH A BALLOON

### RESOURCES NEEDED

- **Balloon**  
Try this next time you are at a party!
- **Skewer**  
You can reuse it too.



### EXPERIMENT

#### SET-UP

- Make sure a rubbish bin is nearby so that the popped balloons can be disposed of easily.

#### STEP 1

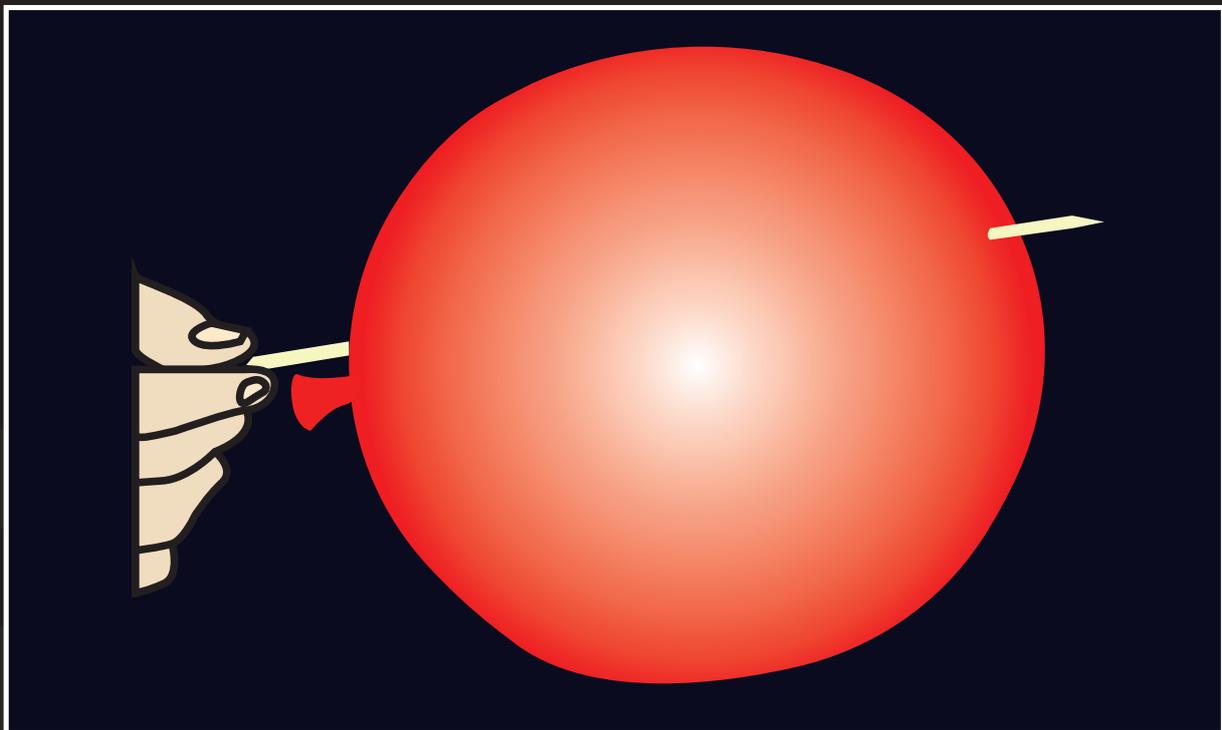
- Blow up a balloon (smaller than the length of your skewer), and tie a knot in the end.

## STEP 2

- Hold the balloon with one hand by the knot, and put the skewer through it, close to the knot.

## STEP 3

- Try pushing the skewer right through to the other side, towards the top of the balloon, at the furthest point from the knot.



## DISPOSAL AND CLEAN UP

- Popped balloons can be ingested by animals and cause harm, so please make sure they are disposed of carefully.

## RISK MANAGEMENT

### RISK

Skewers could cause injury.

### MANAGING THE RISK

Ask people to be careful with skewers.

## SCIENCE EXPLAINED

Balloons pop when they are broken in areas where the rubber is stretched. There are two areas in the balloon where the rubber is not stretched, so if the skewer is carefully put through those areas, the balloon will remain whole. You can easily see where the stretched rubber is if you draw dots all over the balloon before you blow it up. Once it is blown up, you will see where the dots are stretched and distorted, and the two areas (at the knot and furthest from the knot at the top of the balloon) where they look normal. These are the areas that the skewer can be pushed through. Once pierced, the air will slowly push itself out through the gap between the balloon and the skewer, and the balloon will deflate.

## REAL WORLD EXAMPLES

This Science Show Off is a little like a microbiologist piercing a cell when they transfer DNA into it. Piercing the plasma membrane of an egg cell is difficult: it can easily rupture due to the elasticity of its internal wall, a bit like a balloon! No machine can be created to do this, as it is not just a simple piercing movement. You have to be trained to do this and feel where the cell can be pierced without breaking it. The plasma membrane is different to the balloon though, in that it heals after being pierced, whereas the balloon can't and the hole that is made is irreversible, so the air inside the balloon is eventually pushed out.

## PARENTAL GUIDANCE

Science Show Offs should take place with appropriate adult supervision.

## COMPETITION

To enter the Science Show Offs Competition, go to;  
[otagomuseum.nz/scienceshowoffs](https://otagomuseum.nz/scienceshowoffs)