



THE LEVITATING WHEEL!

EFFECT:

You hold a large bike wheel up from both ends of its axle. Then you let go of one end and the wheel continues to be suspended in mid-air even though nothing is holding it up!

DESCRIPTION:

You will need a normal bike wheel that has an axle running through the middle. Around each end of the axle you have a loop of rope to hold it. Get a volunteer to start spinning the wheel for you. Once it has reached a decent speed, lower and remove one of the support ropes: the wheel will continue to remain suspended in the air as if the rope was still there! It will even start to drift around to show that there is nothing attached to the free end.

HOW IT WORKS:

This only works when the bike wheel is spinning above a certain speed. If you try the trick with a stationary wheel, it will just

drop to the ground exactly as expected. Practice doing the trick with a helper until you find the speed above which the wheel will stay suspended in the air.

The spinning of the wheel causes something called the "gyroscopic effect". This is one of the reasons why it's very easy to stay on your bicycle when you're rolling along, but as soon as you come to a halt it's absolutely impossible to stay balanced.

Like moving objects have forward momentum, a spinning wheel has angular momentum as it rotates. For the wheel to tip, this angular momentum has to change to a new angle. Just as it is difficult to stop a large object that is moving toward you, it's hard to change the angle of a large spinning object. This will keep it suspended in the air until it slows down and drops.

HINTS AND TIPS:

The wheel still needs to be supported though. So when you remove one support there will now be twice as much weight on the other remaining support. If you are ready for this, you can make it look like it's not taking any extra effort at all to hold it in the air.

If you cannot get a bike wheel on an axle, remember that this trick works with any spinning object. If you attached a string to the base of a toy spinning-top, you can then suspend it sideways in the air.

When the spinning object is suspended from one end it will start to rotate slowly around that support point. This is called "precession" and if you're ready for it, you can make it look like you're demonstrating that there is nothing attached to the free end.

Makes sure you practise this trick with a helper to make sure you can handle the spinning bike wheel. You will also need to have a plan for how to stop the spinning wheel when the trick is over!

SAFETY:

A spinning bike wheel can do a lot of damage if you're not careful. Do not let your fingers go anywhere near the spokes as they could get seriously injured. Always perform this trick with a helper and make sure you have someone who is big and strong enough to control the wheel safely.

