

# Physics on the Playground

Take your science outside and celebrate **National Get Outdoors Day** with some fun physics experiments at your local playground!

## The Swing Set

A swing is a great example of a pendulum and periodic motion. For this experiment, you will need a stopwatch.

1. Sit on the swing and get it moving as fast as you can without moving from an upright position. Leaning back will affect the swing.
2. Time how long it takes to complete one swing (back, forward, and back is one swing). This is the period of the swing. Take an average of ten swings.
3. Now, shorten the chain by moving the seat or wrapping the swing around the top bar a few times.
4. Repeat steps 1 and 2 with the shortened chain, making sure to time each swing.
5. Return the seat to its normal position when you're done with the experiment!

A swing is a pendulum because it hangs from a fixed point and swings back and forth with the help of gravity. The period (length of time) of one swing is related to the length of the chain. The longer the chain, the longer it will take for the swing to complete one full swing.

## The Slide

A slide is a great way to test the force of friction. For this experiment, you will need a stop watch, and different types of fabric like denim, corduroy, cotton, or spandex. These could be squares large enough for you to sit on, or different pairs of pants you can pull on over one another.

1. Choose your first fabric to test, and time how long it takes you to slide to the bottom. Make sure you just slide down, try not to push yourself along.
2. Select a different type of fabric and repeat the test, timing how long it takes.
3. Repeat with as many different types of fabrics as you'd like.

Did any fabrics increase the friction and slow your slide? What did you notice about those fabrics? Did any fabrics decrease in friction and speed up your slide? What did you notice about those fabrics? Fabrics with a rough surface rub against the slide more, increasing the amount of friction, which slows you down.

