SCIENCE FUN AT HOME

Have some fun at home with these science activities from **Science Sparks** and the **Primary Science Teaching Trust**

BEFORE YOU START! Please read through this with an adult:

- Make sure you have read the 'IMPORTANT NOTICE' on the back of this page.
- If you have a space outside that you can use safely, then you can do the 'Try this outdoors' activity outside. Don't worry if not as you could still do it indoors.
- Talk to your adult about sharing the science you have done and if they want to share on social media, please tag **@ScienceSparks** and **@pstt_whyhow** and use **#ScienceFromHome**

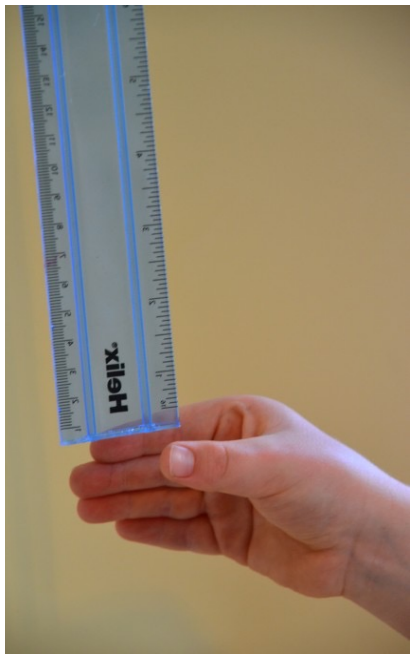
SCIENCE FUN FOR SPORTS DAY

You will need

- 30cm ruler
- Pen and paper
- Timer
- A space you can exercise in

1 TRY THIS INDOORS .... Speedy reactions

Hold the top of a ruler with your fingers on 30cm and your arm stretched out in front of you so the ruler is hanging down. Ask a friend to put their thumb and index finger around the bottom of the ruler but not touching it (see picture). They should watch carefully, and when you drop the ruler, they need to catch it as quickly as they can. Record the measurement on the ruler where they caught it. The lower the measurement, the faster their reaction time. Now swap over or find other people to have a go. Let each person have three turns and record the average value.



WHAT DO YOU NOTICE?

Things to talk about ...

Who has the quickest reactions in your family and friends? Is there a difference in younger and older people's reaction times? Do you get quicker at catching the ruler the more you try? How else could you test your reactions?

2 TRY THIS OUTDOORS .... Investigate your breathing rate

Sit down and rest for a couple of minutes. Count how many times you breathe in 15 seconds (one breath = breathing in and out once). Multiply this by 4 to find out how many times you breathe in a minute: this is your 'resting breathing rate'. Now exercise for one or two minutes. You could run on the spot, do star jumps or any other type of exercise that you like **(safety note: do not push yourself more than you usually do when exercising and stop if you feel unwell or that you are over-exerting).** Once you have finished, measure your breathing rate again. Re-check it every minute over the next 5 -10 minutes.

WHAT DO YOU NOTICE?

Things to talk about ...

Does your breathing increase after exercise? By how much? How long does it take for you to return to your resting breathing rate? Do some types of exercise increase your breathing rate more than others?

3 WHAT IS THE SCIENCE?

Our eyes see that the ruler has been dropped and send a signal to the brain, which then sends a signal to the muscles in the arm and hand to tell them to catch the ruler. These signals travel along our nerves, very, very quickly. Your reaction time depends on the time taken for the signals to travel.

Your body needs oxygen in order to release energy from the food you eat. When you breathe, oxygen in your lungs moves into your blood, which is then pumped by your heart around your whole body. When you exercise your muscles are working harder. This requires more oxygen which is why your breathing rate increases. One of the waste products when energy is released from food is carbon dioxide. This travels in your blood back to your lungs and then you breathe it out.

4 MORE ACTIVITIES YOU COULD TRY

INVESTIGATE EXERCISE AND PULSE RATE www.science-sparks.com/exercise-affect-heart-rate/

WHY DO WE SWEAT DURING EXERCISE? www.wowscience.co.uk/resource/sock-it-to-me/

EXPLORE HOW MUCH SUGAR IS IN SPORT DRINKS www.science-sparks.com/how-much-sugar/

FIND OUT WHY SPORTS BALLS BOUNCE www.science-sparks.com/why-do-balls-bounce/