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# GCSE Biology required practical activity 7: Reaction Time

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## Student sheet

Required practical activity	Apparatus and techniques
Plan and carry out an investigation into the effect of a factor on human reaction time.	AT 1, AT 3, AT 4

### Investigating whether practice reduces human reaction times

Messages travel very quickly around your body through the nervous system. This is so that you are able to respond to changes in the environment. The time it takes for you to respond to such a change is called your reaction time.

Athletes spend hours practicing to try to reduce their reaction time in order to improve performance in their particular sport. Responding quicker to the starter's pistol in a race can gain you the advantage over other runners.

In this investigation you will conduct a simple, measurable experiment called the ruler drop test to determine whether your reaction time can be reduced with practice.

Learning outcomes
1
2
<b>Teachers to add these with particular reference to working scientifically</b>

## Method

You are provided with the following:

- a metre ruler
- a chair
- a table
- a partner

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**You should read these instructions carefully before you start work:**

1. You should use your weaker hand for this experiment. If you are right handed then your left hand is your weaker hand.
2. Sit down on the chair with good upright posture and eyes looking across the room.
3. Place the forearm of your weaker arm across the table with your hand overhanging the edge of the table.
4. Your partner will hold a ruler vertically with the bottom end (the end with the 0 cm) in between your thumb and first finger. Practice holding the ruler with those two fingers.
5. Your partner will take hold of the ruler and ask you to remove your fingers.
6. Your partner will hold the ruler so the zero mark is level with the top of your thumb and tell you to prepare to catch the ruler.
7. Your partner will then drop the ruler without telling you.
8. You must catch the ruler as quickly as you can when you sense that the ruler is dropping.
9. After catching it, look at the number level with the top of your thumb on the ruler. Record this as a measure of how fast you caught it in a table such as the one here.

Drop test attempts	Ruler measurements in cm		Reaction times in seconds	
	Person 1	Person 2	Person 1	Person 2
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

10. Have a short rest and then repeat the drop test. Record the number on the ruler as attempt 2.
11. Continue to repeat several times.
12. Swap places with your partner and repeat the experiment to get their results.
13. Use a conversion table to convert your ruler measurements into reaction times.