

Reaction time

Catch me if you can!



Is your dominant hand faster or slower to react?

- ❖ Does age affect reaction time?
- ❖ What is gravity?

Estimated time: 20 minutes

No prior knowledge needed.

Instructions

Watch the video (youtu.be/gJEuT3aKcMI)

1. Make one person **Dropper**, the other **Catcher**.
2. **Catcher** extends their forearm at elbow height with forefinger and thumb about 1 cm apart. **Dropper** holds the ruler at the top over the 30 cm at a height so **Catcher** has their thumb and forefinger either side of the zero cm mark.
3. **Catcher** says when they are ready. **Dropper** then counts up, in their head, to a number between 3 and 5, using a different number each time. When the number is reached, they drop the ruler.
4. **Catcher** catches the ruler as fast as possible by pinching it between forefinger and thumb. Ignore any times **Catcher** fails to catch the ruler.
5. Write down the ruler cm value closest to Catcher's pinch point, NPL's Results Sheet – which you can download from our webpage, will help you record and calculate results.
6. Do steps 2-5 five times and take the average.
7. Convert drop distances to reaction times using the look up table on the **Results Sheet** from the NPL webpage, and find the range of results by subtracting the longest reaction time from the shortest one.
8. Repeat the experiment using **Catcher's** other hand.
9. Label results 'dominant' hand and 'non-dominant' hand. (Dominant hand is the one that more comfortably holds a spoon or pencil).
10. Swap **Catcher** and **Dropper** roles to get more results.
11. Enter results below or into NPL webpage:

npl.co.uk/measurement-at-home/reaction-time

Average reaction time (dominant hand) (in milliseconds)	
Range of reaction time (dominant hand) (in milliseconds)	
Average reaction time (non-dominant hand) (in milliseconds)	
Range of reaction time (non-dominant hand) (in milliseconds)	
Age (optional)	

#MeasurementAtHome
npl.co.uk/measurement-at-home

Equipment required

- A 30 cm ruler
- Two people
- Paper and pencil for results and calculation - even better – use the NPL Results Sheet on our webpage.

Risks

- ❖ Be careful not to drop ruler on people's feet.

SI measurement units

- ❖ second (s) for time
- ❖ metre (m) for length

Challenge Topics

- ❖ Human Biology, Measurement Science, Maths, Forces.

Thoughts, tips and information

- ❖ How many measurements are needed to establish if there is a real difference in response time for your two hands?
- ❖ Reaction time might also be affected by background noise, time of day and eating chocolate.
- ❖ Practice can reduce reaction time by 'training' your body – check out 'muscle memory'. Sports people, gymnasts and dancers do this to improve accuracy of performance.

Adult direction or supervision is required. All experiments are carried out at your own risk.
For more experiments, visit [NPL Measurement at Home](https://npl.co.uk/measurement-at-home).