

Module: *Marvellous Motion*

Episode 2: Jump and Run

Activity Sheet 2.1 Jump and Run

- You are going to work together to collect and analyse data to test out an idea.
- The idea is that people who can jump higher can also run faster.

You will collect data for two different activities.

Next, you will combine this with the rest of the data collected by your class, and analyse it to find out if you can spot any trends.

Then you will share your findings with your class.

The two different tests to complete are

1. The Vertical Jump Test
2. The Sprint Challenge

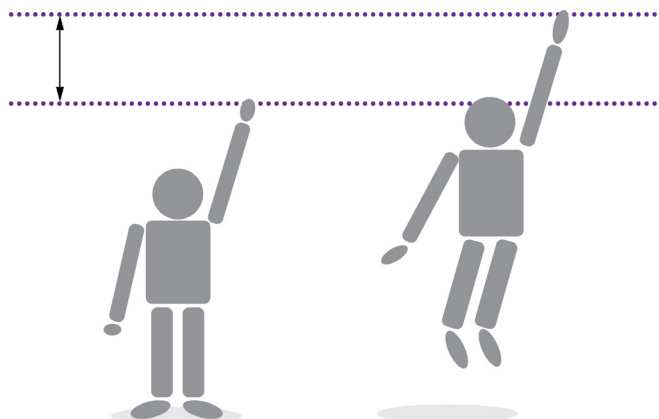


You will need



- A wall to jump against
- A space to run
- Measuring tape
- Chalk
- A stopwatch
- A notebook and pencil

The Vertical Jump Test



Vertical jump height is the difference between your standing reach height (stretch height) and the highest point you can reach with a vertical jump (jump height).

You will need a wall that can be drawn on with chalk to mark height.

1. Put the chalk on the ends of your fingers, then reach as you can whilst keeping both feet on the ground. Mark the wall with the chalk at the highest point.
2. Use your arms, hips and legs to thrust yourself up into a jump as high as you can, marking the wall at the highest point of your jump; repeat the jump-mark two more times.
3. Measure the differences between the stretch mark and the three jump marks.
4. Record your results in the table below, then take an average.

Jumper	Jump height above stretch height (cm)			Average height (cm)
	1	2	3	
You				
Your Partner				

The Sprint Challenge



1. Mark out a 'sprint zone' of a known length (20 or 30m) where the running speeds will be calculated.
2. Make a starting point 15m straight before the sprint zone. It's important to have this run up to the 'sprint zone', to allow the runner to get up to speed.
3. One partner, beginning at the start point, sprints as fast as possible up to and through the sprint zone.
4. Your partner times you with a stopwatch when you go through the sprint zone.
5. Repeat three times. Your partner should record the times you take in the table below, then work out the average time.
6. Using that average, work out the average speed, with the formula:

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

Runner	Length of the Sprint Zone (m)	Time to run the Sprint Zone (s)			Average time (s)	Average speed in the Sprint Zone (m/s)
		1	2	3		
You						
Your Partner						

Data Handling



You will now have 2 sets of data:

- an average jump test in cm
- an average sprint speed in m/s.

1. Make a results table showing the data for all your class.
2. Plot your class results on a graph, with Jump height up the side and Sprint speed along the bottom. Take care plotting your results.
3. Look for a pattern in the results.
4. Discuss and write about what you found out.