

Which surface is
best for running
on?





What do we already know?

Think about these questions to get your brain going! You don't need to write any answers.

- What kind of surfaces do you normally go running on?
- If you watch running on the TV, what do they normally run on?
- Where do you think you can run fastest?
- Have you ever tried to run somewhere difficult?
- Why might some surfaces be better than others for running?
- What would make a good surface for running on?
- What would make a bad surface for running on?

Make a prediction!

Write the sub-heading 'Prediction' in your books.

Choose 3 different surfaces that you are going to test – for example, grass, concrete, carpet, sand, tiles, etc - and then complete these sentences:

- I think I will run fastest on the _____ because...
- I think I will run slowest on the _____ because...

Plan a fair test

Write the sub-heading 'Fair Test' in your books.

Remember, to make a test fair we only change ONE thing each time we do the test. Have a look at the things below. Which ONE variable will we be changing? Which will we be keeping the same? Once you've decided, complete the sentences below.

Distance we run Shoes we wear Surface we run on
Weather we run in Slope of the surface

- We will change the.....
- We will need to keep the same....

Take your measure- ments

Write the sub-heading 'Results' in your books.

We should have worked out that we will change the surface each time, so the distance, the weather, the slope and the shoes need to always be the same. Decide what these will be before you start.

Ask an adult to time you running the same distance on your 3 different surfaces. Record your time in a table like this (your surfaces and distance might be different!):

| Surface | Time to run 20m |
|----------|-----------------|
| Grass | 7 seconds |
| Concrete | 4 seconds |
| Sand | 12 seconds |

The Science

Read this information to help you try and make sense of your results:

Athletic tracks, which are usually made of a man-made rubbery surface, are designed to be used in all weather conditions and give you good grip and bounce needed for speed.

Grass and earth are soft and easy for your legs to run on as they aren't hard under your feet, but they make your muscles work hard and can be more difficult over longer distances. Grass can also be uneven and slippery, so this might add more challenges, especially in bad weather.

Sand is a very resistant surface – this means that it will rub hard against your shoes and slow you down. It will give your leg muscles a great work-out though!

Concrete isn't the softest surface, but it is consistent (always the same, not bumpy) and one of the fastest surfaces you can find. So even though it is hard under your feet, it's a nice, even surface to run on.

Indoor surfaces like carpet and hard floor are also likely to be consistent, but depending on the material they might be very hard under your feet and they could be quite resistant.

Make your conclusion

Write the sub-heading 'Conclusion' in your books.

Your conclusion is when you say what you've found out, and WHY you think that is. It's best if you back up what you say with evidence from your results. Have a go at completing the sentence starters below:

- The fastest surface to run on was...
- I think that this is because...
- The slowest surfaces to run on was...
- I think that this is because...
- If I was going to design I race track, I would use...