

SPEED Science of Racing

Fundamentals (2) – Friction & Traction

Put your hands together. Do you feel anything?
Now rub your hands together for a few seconds.
Why do you feel warm?



DO YOU KNOW?

The warmth felt is caused by **friction** and is found everywhere objects come into contact with each other.

Friction happens when the resistance of one object rubbing against the other is overcome. The force acts in the **opposite** direction to the way an object slides

We need friction to walk or run and to drive or cycle. But when sliding down an escape chute, we don't need too much of it!

Which of **ONE** of the following does not cause a lot of friction?



Why are there activity / sports-specific shoes? [Discussion]



Running Shoes

Climbing Shoes

Soccer Shoes

Ballet Shoes

DO YOU KNOW? What is traction? Is it the same as friction?

- **Traction** refers to the maximum frictional force that can be produced between surfaces without slipping.
- Traction enhances frictional force. If we are climbing rock, friction from just any pair of shoes is not enough. What we need is sufficient grip from the shoes for the amount of weight, area of surface contact and how it sticks to a particular surface.



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At the **Friction and Traction** exhibit, try out the slippers fitted with different materials.



Which material gave the most resistance?
How do we relate this to activity / sports-specific shoes?

Now you know about the relationship between shoes and traction. How about tyres?

In Formula One (F1) race, tyres are one of the many important components.



Which of the 6 tyres below are for use during wet weather? Indicate the colour(s).



The fastest car will be the one with the most tyre traction. Traction aids in:

Stability	True	False
Acceleration	True	False
Cornering	True	False
Braking	True	False
Energy efficiency	True	False

