SCIENCE

Lesson 20

Year 4

Topic: Testing games

Science in sports

Today you will:

► understand that scientists study sport to improve performance.

Resources

Digital

Audio — Forbes Carlile talks about sports science as a career, 2008 (1:31) (TLF R10263)

Slideshow — Sports forces

Find and prepare

Exercise book

Key terms

For definitions and explanations of terms, please see the Glossary.

Lesson

Explore sports science

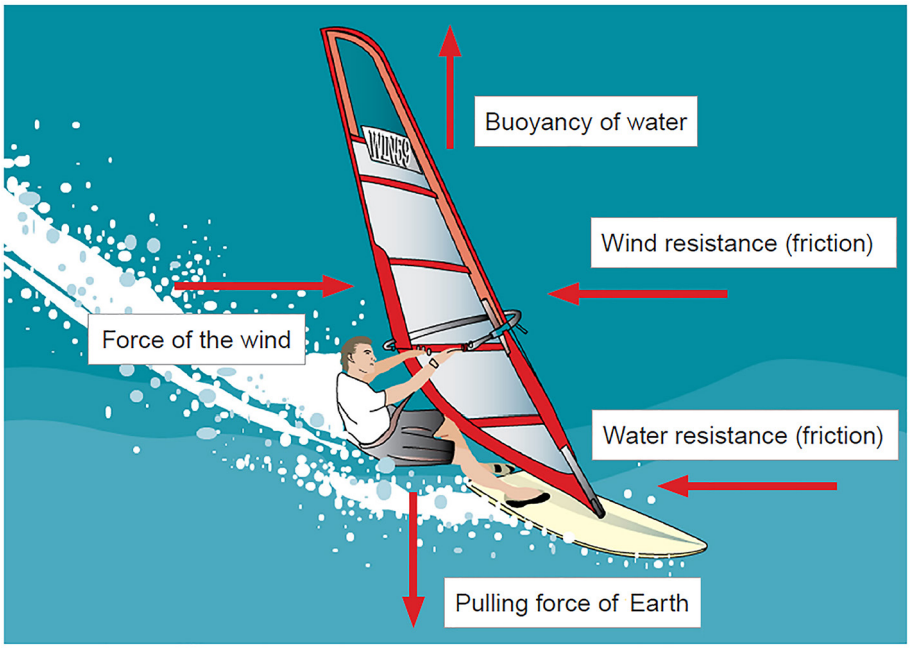


In this lesson, you will understand that science plays a very important part in helping athletes to perform at their very best in all sorts of sports.

There are many elements to sports science including looking at how the athlete's body works with and against the forces. By understanding the forces, the scientist can help the athlete to perform better.

When a sports scientist investigates sports, they are doing it to answer a science question or solve a problem by working scientifically. To do this, they need to observe the sport being played and monitor results.

1. Listen to swim coach and former Olympic athlete Forbes Carlile talk about a career in sports science: **Audio —** Forbes Carlile talks about sports science as a career, 2008 (1:31) (TLF R10263) (Education Services Australia) CC BY-SA 3.0 AU creativecommons.org/licenses/by-sa/3.0/au/
2. Look at this image of a windsurfer and all of the forces involved while windsurfing.

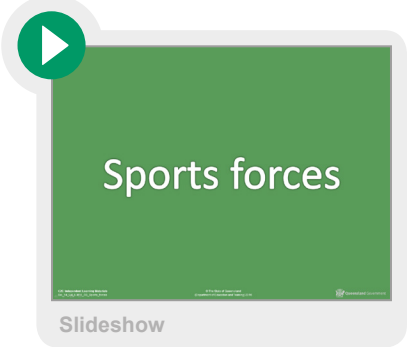


3. List some other examples of forces in sports that a scientist could study.

Understand how forces affect sports

4. View the **Slideshow — Sports forces**.

   This slideshow identifies the forces used in various sports.



a. List some pushing forces in sports from the slideshow.

b. List some pulling forces in sports from the slideshow.

c. How could a scientist help an athlete to improve his or her performance?

Understand how forces affect sporting equipment and clothing

5. a. Describe one example of how special sporting equipment or clothing can improve performance by decreasing friction.

b. Describe one example of how special sporting equipment or clothing can improve performance by increasing friction.

6. Look at these ballet shoes and the surface on which the dancers are performing.



https://pixabay.com/en/ballet-shoes-ballerina-dance-999807/

a. Why are these shoes suitable for dancers on this surface?

b. Would these shoes be suitable for footballers playing on a wet, grassy surface? Explain why or why not.

7. Look at this ball.



https://pixabay.com/en/small-ball-rubber-balls-toy-892166/

a. Would this ball be a good substitute for a bowling ball? Why or why not?

b. What sort of activity would this ball be useful for?

Explain forces in sports

8. Think about a sport or activity you have played or seen being played.

   a. Describe the forces involved in the sport or activity.

   b. Draw a force diagram in your exercise book showing some of the forces involved in the sport or activity.

Reflection

9. You might want to explore some of the investigations and activities on these websites:
   - **Website — Finding the sweet spot** (Exploratoriumt)
     http://www.exploratorium.edu/baseball/sweetspot.html
   - **Website — The scientific slugger** (Exploratorium)
     http://www.exploratorium.edu/baseball/scientificslugger.html



In these ‘Fast forces!’ lessons, you have investigated and demonstrated how forces affect objects through contact and non-contact forces. You have used this knowledge to design games and to make predictions, you have collected data and identified situations where science is used to ask questions and make predictions. Well done!