

Secrets of Sport

Secrets of Sport is packed with scenarios to motivate students to learn about materials and their properties, providing direct links to friction and forces in action. (2b,2c , 2d, 2e)

Key science concepts

- **Friction is a force between one or more objects that opposes and slows down movement.**
- **Water pushes upwards, making objects float, unless they are denser than the water.**
- **Water resistance slows an object moving through water.**
- **As things move through the air the slow down. This is called resistance. Usually the larger the surface area the slower they travel through the air.**

Background Knowledge

A force is only needed to initiate movement of an object; no force is needed to keep it moving. Forces (such as friction, air resistance, or water resistance) may act against it, unless force is applied to overcome this.

Upthrust is a force exerted by water on objects, giving them buoyancy: objects weigh less, when suspended in water, than in air. An object floats if it displaces its own weight in water.

Air exerts force on objects. The greater the surface area of the object the more air there is beneath it and therefore the greater the force acting upwards on it.

Before the Reading

Using the KWL page students will write what they know or think they know about the science of sports, what questions they might have about it.

During the Reading

Ask students to consider how these following questions relate to the reading. Then have them record their answers.

Have you ever held your hand out of the car and felt the wind splitting around it? (Page 14-15)

Have you ever felt the sticky sap on a tree? The sap makes the tree waterproof; much the same way plastic makes racing boats waterproof. (Page 18-19)

Have you ever jumped into a pool or lake? Did you sink or float back to the surface? If you answered yes then you have conducted an experiment on buoyancy. (Page 18-19)

Have you ever had a thorn catch on your clothing? The spikes on BMX pedals grip the shoes in much the same way. (Page 23)

Did you know that curves in your bed springs have the same effect as the curve in Oscar's artificial legs? (Page 29)

After the Reading

Students return to the KWL page after reading to record what they learned.

Challenge Activity

Have students make and design paper airplanes. Then conduct flight trials and record data for comparison.