

Science - Year 6

Second Look Science – Block 6SLS

The Science of Sport

Session 3

Resource pack

Sports people challenge

What forces do they influence through their kit and equipment?

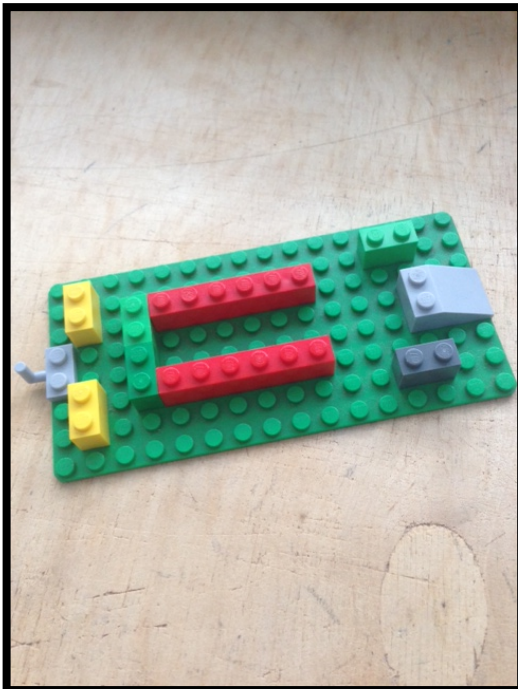
Tennis player	Long distance runner
Goalie: football	Gymnast
Rugby player	Pole vault
Goalie: hockey	Mountain biker
Hockey player	Long jumper
Golfer	Snooker player
Netball player	Weight lifter
Triathlete	Cricket bowler
Cricket batsperson	Wicket keeper
Basketball player	Track cyclist
Rower	Swimmer

Footy Boot Friction

Look at these examples and use this enquiry to investigate which stud patterns give you the best grip.



Equipment: Lego™, elastic bands, shoe, force meter



Method:

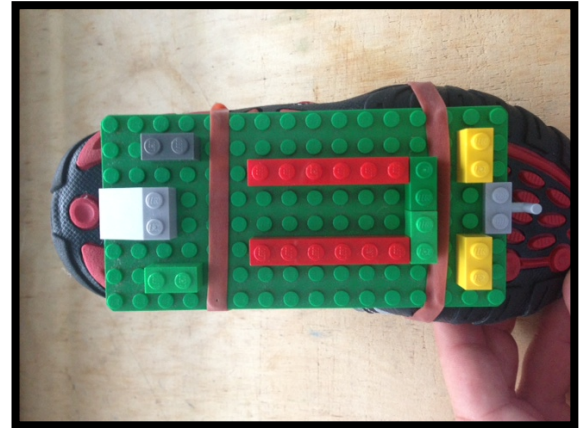
Using a base plate of Lego™ create your own arrangement of studs.

This might be based on the examples above, on other boots or a design of your own. Will you have studs or blades?

Record your configuration on the record sheet with a drawing.

When complete attach the studs to the bottom of a shoe with elastic bands.

If possible create an anchor point to the front so that the force meter can be securely attached.



Pull the shoe using the force meter.

Record the amount of force required to start moving the shoe.
The greater resistance the better the grip.

Repeat the test a number of times for accuracy.

Recording sheet

I want to find out _____

I created _____

Variables: _____

Things I kept the same were _____

I recorded the force needed to move each arrangement _____ times.

Drawing of Design 1

Drawing of Design 2

Pull 1:	Pull 1:
Pull 2:	Pull 2:
Pull 3:	Pull 3:
Average:	Average:
Comments:	Comments:
My enquiry shows that ...	

Get a Grip investigation

Investigate which materials make the best surface for wicket keeping gloves. Grip is important when attempting to catch a cricket ball. To make the test fair we only changed _____, everything else was the same.

Equipment: ball, various materials, ball force meter, table

Method:

1. Test five materials and cut a hand shape from each
2. Attach one hand shape to the palm of a glove
3. Hold the ball still and place the glove on the ball
4. Drag the glove from the ball using a force meter
5. Observe and record the force needed to remove the glove
6. Repeat this twice for each material

What is the relationship between the force needed to move the glove and the level of friction and therefore grip?

Results:

	Material 1	Material 2	Material 3	Material 4	Material 5
Test 1					
Test 2					
Test 3					
Average					

These results show that

Under Pressure – Testing Ball Pressure investigation

Investigating how the air pressure inside a ball affects the height to which it bounces.

Inflate a ball to the correct pressure using a pump with a gauge. Pass the ball around so that children can get a feel for the correct pressure as outlined in basketball rules (an air pressure between 7.5 and 8.5 pounds of pressure per square inch).



What will happen when you hold the ball at arms length in front of you and let go? Can you describe what is happening scientifically? How high does it rebound? How could this be measured accurately?



What do you predict might happen if the pressure of the ball is increased or decreased?

Can you design a fair test to test the effect of ball pressure on bounce?

What needs to stay the same?

What needs to be changed?

Will you repeat measurements? Why?

Equipment: ball, pump and gauge

Method:

1. Under-inflate a basketball or netball.
2. Drop the ball from a measured height next to a metre stick
3. Observe how high up the metre stick the ball bounces
4. Repeat the test two more times
5. Now inflate the ball to the correct pressure and test again
6. Finally over-inflate the ball and repeat the test
7. Record your results in a table

Results:

	Under-inflated	Regulation	Over-inflated
Test 1			
Test 2			
Test 3			
Average			

These results show that
