



## Biomechanics of kicking

**Key Learning Area**  
 Health & Physical Education  
 Science  
 Mathematics  
**Year levels**  
 Years 5–8

### Activity overview

This activity provides students with the opportunity to explore the skills associated with kicking a football over short and long distances.

Students plan and conduct a scientific test to gather data to show how kicking distance can be increased. The focus on this session is to recognise the limitations of gathering reliable data in some types of investigations.

### Time required

Session 1: 60 minutes

Session 2: (planning) 45 minutes and (conducting test) 60 minutes

### Materials

- Worksheets 1 and 2
- measuring equipment to measure in metres; ie, tape measure, protractors
- cones or similar markers
- a large field to conduct the test
- Australian footballs
- 'Kick the ball' clip from the Resources section of the AFL CD-ROM

### Preparation

Photocopy the worksheets; double-sided is suitable.

Organise a large field to conduct the test.

Conduct the planning session prior to conducting the investigations to allow time to collect the identified equipment.



## Activity steps

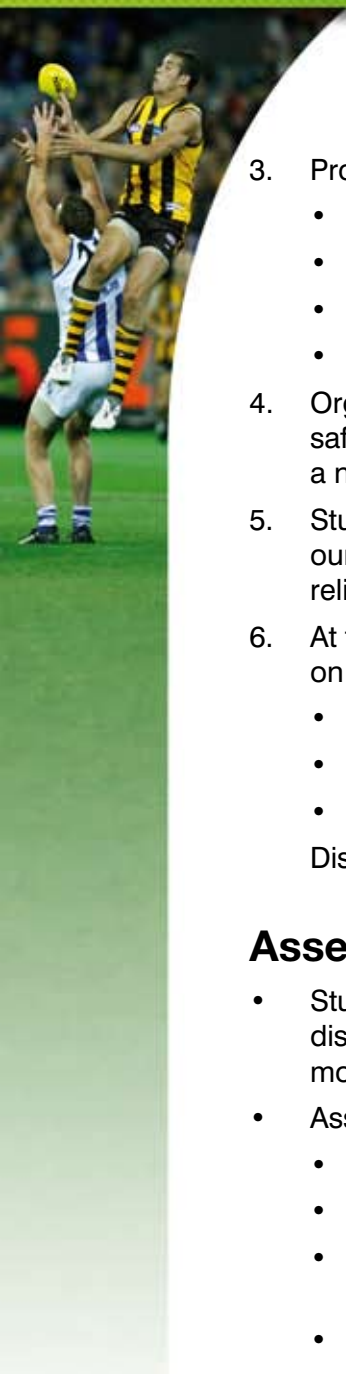
### Session 1

1. In the classroom prior to the activity view the [AFL](#) website, coaching section skills and drills relating to kicking or [NAB AFL Auskick](#) web site.  
View the 'Kick the Ball' clip in the Resources section of this AFL CD-ROM.
2. Discuss the skills of kicking a football. Demonstrate (or ask a capable student to demonstrate) a drop punt kick. Emphasise the following coaching points:
  - Line up the ball with your target. Have your head bent slightly over the ball.
  - Hold the ball pointing downwards over the thigh of the kicking leg.
  - Guide the ball down with one hand.
  - Point your toes at your target – watch the ball hit the foot.
  - Follow through straight towards the target.
3. In pairs, students practise the skill over a short distance marked with cones. Assist students that require closer instruction to correct skill errors, focusing on the key coaching points. As an extension, students kick to a student leading from the cone.
4. Gather students in as a group and discuss ways in which they modify their kicking to kick for distance rather than a short pass. Arrange students to work in teams of four to explore different ways to modify their drop punt kick to kick a further distance. Students may explore:
  - changing the force of the kick
  - changing the angle of the kick
  - adding a short run up.

After exploration, students share and demonstrate their team's ideas. Encourage students to make the connection between the increased time the ball is in flight and the increase in distance travelled.
5. Break students into two groups to kick for distance at a target using their preferred method.

### Session 2

1. Review the skills of kicking a football using a drop punt style of kick over a short and long distance. Challenge students to plan and conduct a scientific investigation to test the effect of attempting to change one aspect of the kick, for example:
  - change the angle of the kick
  - compare a short run up with standing still.
2. Discuss the need to understand what they are trying to test. Does the angle affect the distance you can kick a football using a drop punt kick? Provide *Worksheet 1: Planning our investigation* to assist students to plan their investigation.



3. Provide students with support using the guiding questions to facilitate discussion:
  - What and how will you measure?
  - How will you decide on who kicks the ball?
  - How many trials will you include?
  - How will you ensure the test is fair?
4. Organise the necessary equipment and a large area to conduct the test. Discuss safety and rules for kicking balls, such as one direction only, a kicking zone and a no ball kicking zone etc.
5. Students conduct their test and record their data using Worksheet 2: Conducting our investigation. Encourage students to interpret their results and consider the reliability of the data.
6. At the completion of the session each group shares their results. They comment on the reliability of the data. Encourage students to recognise the difficulty to:
  - control the magnitude of the kicking force applied in each test
  - accurately measure the angle of the kick
  - kick the same way each time.

Discuss what students learned from planning and conducting the investigation.

## Assessment ideas

- Students demonstrate the skill of kicking a drop punt accurately over a short distance and kick for distance at a target. They are able to discuss how they modify their kicking style depending on the distance of the kick.
- Assess students' ability to:
  - plan a scientific investigation
  - measure, record and interpret data in a table
  - describe the reliability of data collected and recognise where data accuracy is difficult to control
  - reflect on their learning.

## Optional extension

Organise for students to teach a younger person the skill of kicking a drop punt. As a group, discuss useful coaching points for younger children and the use of demonstration. Older students could assist during a Physical Education lesson focusing on the skill of kicking. Students work one-on-one with a younger student. Students discuss the benefits of teaching a skill to another person.



# Worksheet 1: Planning our investigation

Name: \_\_\_\_\_

Plan and conduct an investigation to gather evidence showing how kicking distance can be increased.

In your group, brainstorm ways kicking distance can be increased.


Choose one idea from your brainstormed list to test. Our group is testing the affect of

\_\_\_\_\_.

**Remember to be a fair test everything else must remain the same.**

Formulate a question to test.  
*For example, Does changing the kicking angle affect the distance kicked?*

\_\_\_\_\_

Our plan

Decide as a group how you will plan your test and gather evidence.

- What and how will you measure?
- How will you decide on who kicks the ball?
- How many trials will you include?
- What equipment will you need?





## Worksheet 2: Conducting our investigation

Name: \_\_\_\_\_

Rule extra lines in the box below to create a table to record your results.


Our data shows ...

Indicate how reliable you think your data is: not very reliable/very reliable  
Describe reasons for your choice.

What have you learned from this investigation?

Biomechanics of kicking