

REACTION TIMES

Introduction

Quick reaction time is the key to winning any running sprint competition. Reaction time is the measurement of your reaction to signals.

Objectives

Here are your objectives for this activity:

- ✓ Learn how technology helps in measuring reaction times
- ✓ Learn the importance of reaction times to athletes

Exercise

Read the text below to answer the questions that follow.

Ursain Bolt is recognised as the world's fastest runner. His records include running 100 m in just 9.58 s, and 200 m in only 19.19 s. After hearing the starting pistol, Ursain Bolt starts to run within 0.15 s. This reaction time is slower than other athletes of his standard.

The seven-year records from 100-m races reveal that the reaction times of athletes are between 0.10 and 0.23 s. In 2003, Jon Drummond was disqualified because of a false-start. This was detected through the use of technology that triggers a false-start alarm when an athlete starts to run within 0.10 s after the starting signal. The technology recorded that Jon Drummond reacted 0.053 s after the signal. He contested the ruling and insisted on continuing the race. However, technology cannot tell whether he was right.

At the start of the race, sprinters set their foot at the starting block. The time between the starting signal and the change in the force applied to the starting block is measured. This is their reaction time. Reaction times can also be measured by analysing the images captured by highspeed cameras.

Answer these questions:

1. What is a reaction time?
2. How is technology used in measuring reaction time?
3. What are the advantages and disadvantages of using technology to measure reaction times in sports?

4. What are the factors that may affect reaction times?
5. Shorter reaction time is advantageous for a 100-m runner than for a marathon runner. Why is this the case?
6. Ursain Bolt and Mo Farrah won their gold medals in their respective competitions in the 2012 Olympics. Using the data below, calculate the percentage of a 0.15 s reaction to the total race time.

	Ursain Bolt	Mo Farrah
Race	100-m sprint	10 000-m long-distance race
Race time	9.36 s	27 min 30.42 s

7. Using your answer to Question 6, compare how the 0.15 reaction time affects each of these races.

