AQA GCSE Physical Education
Third Edition

Brand new Third Edition
for the 2016 AQA Physical Education specification

NEW from best-selling author Kirk Bizley
Brand new Third Edition for the 2016 AQA Physical Education specification

GCSE Physical Education is changing. For the first time, use of data will be embedded into exam questions and you’ll also see more theory in the new 2016 specification. We have updated our tried and trusted resources to ensure you are fully supported and have everything you and your students need for 2016.

- New edition written by best-selling, trusted author Kirk Bizley
- Updated to completely match the 2016 AQA specification
- Expert support on how to teach theory through practical activities
- Contains everything students need to succeed including exam-style questions for practice
- Presented visually to ensure the content is accessible to all your students
- Additional support by popular demand – an online digital resource and a printed pack of worksheets

<table>
<thead>
<tr>
<th>Student Book</th>
<th>Workbook and Worksheet Resource Pack</th>
<th>Kerboodle Book*</th>
</tr>
</thead>
<tbody>
<tr>
<td>978 019 837025 3 £20.00 April 2016</td>
<td>978 019 837026 0 £125.00 April 2016</td>
<td>978 019 837028 4 £150.00 + VAT Summer 2016</td>
</tr>
<tr>
<td>Concise and visually engaging Student Book designed to ensure your students achieve their full potential</td>
<td>A coherent set of fully differentiated worksheets to help your students organise their learning</td>
<td>Online support for the 2016 AQA GCSE Physical Education specification</td>
</tr>
<tr>
<td>978 019 837026 0 £125.00 April 2016</td>
<td>978 019 830909 3 £150.00 + VAT Summer 2016</td>
<td>An online version of the AQA Physical Education Third Edition Student Book</td>
</tr>
</tbody>
</table>

*Prices for Kerboodle products are for an annual subscription for unlimited users. For full terms and conditions, visit www.oxfordsecondary.co.uk/kerboodle-terms.
†Brand new content for the 2016 specification will be added in June 2016. Content for the old specification will remain available until August 2018.
Kirk Bizley is an experienced author, having written over 40 PE textbooks since *Examining Physical Education* was first published in 1995. In 2004 *Examining Physical Education* became the set textbook for the secondary examination in Malta (MatSec) and in 2011 *On Track: The Complete Caribbean Guide to Health, Physical Education and Sports* became the set textbook for the CaribSec examination in the West Indies.

Kirk has also spent many years as an examiner for GCSE PE, both as a Principal Moderator for the practical component of the course and as Chief Examiner.

For 25 years, until 2003, Kirk was a PE teacher and Head of PE at a rural comprehensive school. Here he drew on his experience as a textbook author and examiner to support his students and help them achieve success at GCSE. In 2003 Kirk moved to Bath Spa University to establish and run the secondary PGCE PE programme. As a Senior Lecturer he now has the opportunity to pass on his enthusiasm for and commitment to PE to the next generation of teachers. He continues to write and deliver school-based workshops around the world.

“If you’re looking for resources matched to AQA’s new specification, then look no further. We’ve got everything covered, including activities that give students an opportunity to practice using data, support for the increased theory, plus plenty of exam practice and differentiation.”

*Kirk Bizley*

**Specification support**

Turn to pages 3 and 4 to see how *AQA GCSE Physical Education Third Edition* supports the new 2016 AQA specification.

**Order your Evaluation Pack, free for 90 days**

*AQA GCSE Physical Education Third Edition Evaluation Pack*

978 019 837524 1 £20.00

The *AQA GCSE Physical Education Third Edition Evaluation Pack* contains:

- Student Book
- *Worksheet and Workbook Resource Pack* sample material
- Access to sample resources on Kerboodle
### Increased theory

The new specification has more theory content than the previous specification. If you have taught A Level before, then you will probably be familiar with most of it. If any of it is new to you, then we’ve got it covered.

For example:
- **Movement analysis** is covered in Chapter 2.
- **Performance-enhancing drugs** is covered in Chapter 5.
- **Hooliganism** is covered in Chapter 5.

The key terms included in the specification and the definitions of these key terms provided in the subject specific vocabulary provided by AQA will be used throughout the resources.

### Use of data embedded into exam questions

The amount of maths content within the new GCSE is increasing. For the first time, use of data will be embedded into exam questions. Students will be expected to demonstrate an understanding of how data is collected, presented, interpreted, analysed and evaluated in the context of sport and physical activity.

We have included activities throughout the book to provide students with the practice they need to tackle exam questions involving data with confidence.
Plenty of exam practice

Following feedback from you we have updated the third editions to include resources that focus on helping students practice for their exams.

- Each chapter ends with exam-style questions, including multiple choice questions, shorter answer questions and extended writing questions, to give students lots of practice at answering questions themselves.

- We have written a mark scheme for each exam-style question, to help you mark students’ answers, or for you to give to students to help them understand how questions are marked, or to facilitate peer marking.

- Two sample answers – one good answer and one weaker answer – are provided in two formats for each exam-style question. The questions by themselves can be used, with or without the mark schemes, to give students an opportunity to mark answers. The questions with commentary can be used to help students understand what is required and develop a technique for answering exam questions confidently.

We also plan to add more exam practice resources to Kerboodle, as updates, in future.

Differentiation

Many of you will need to cater for a range of different abilities in your classes so we’ve built in plenty of support to these new editions.

- Activities in the Student Book are differentiated, where appropriate, through the provision of a worksheet for less able students.

- The majority of the pages in the Workbook and Worksheet Resource Pack are also differentiated, with extra support provided on the ‘plus’ pages for less able students.
2.1 Types of levers

All movements made by the body are produced by a series of levers working together. Without levers we would not be able to throw or kick a ball, run or jump. A lever is a rigid bar that turns about an axis to create movement.

There are three types of levers – first class levers, second class levers and third class levers – and they all make use of a fulcrum, load and effort. The fulcrum is the point at which a lever turns or is supported. The load is the weight or ‘resistance’ the lever must move. The effort is the force required to move the load and, in the human body, the effort comes from the muscles.

**First class levers**

First class levers have the fulcrum midway between the effort and the load. Also, the fulcrum is quite close to both the effort and the load.

**Second class levers**

Second class levers have the load between the fulcrum and the effort. This means that a large load can be moved by a relatively small effort.

**Activity**

1a) Take part in, or watch a video of, the take-off phase of a long jump. What sort of lever is being used at the ankle?
1b) Using a small hand weight, or a similar object, perform a bicep curl. What sort of lever is being used by the elbow?
1c) Draw a simple diagram of each action. Label the load, effort and fulcrum.

**Key terms**

- **Lever**: A rigid bar that turns about an axis to create movement. All levers contain a fulcrum, load and effort.
- **Fulcrum**: The fixed point at which a lever turns or is supported. It can also be referred to as the 'pivot'.
- **Load**: The weight or ‘resistance’ that the lever must move.
- **Effort**: The force required to move the load. It can also be referred to as ‘force’.

**Visual, double-page design helps students of all levels access and understand the theory**
All movements made by the body are produced by a series of levers working together. Without levers we would not be able to throw or kick a ball, run or jump. Levers come in three classes – and they all make use of a fulcrum, which is the point at which a lever turns or is supported. The load is the weight or ‘resistance’ that the lever must move. The effort is the force required to move the load and, in the human body, the effort comes from the muscles.

![Image of a lever system](image)

**Key terms**

**Lever:** All levers contain a fulcrum, load and effort. The fixed point at which a lever turns or is supported. It can be supplied by the biceps and triceps. The fulcrum is the point at which a lever turns or is supported. The load is in the middle of the lever. The effort is in the middle of the lever. When an athlete throws a javelin, the way the arm moves is a lever in action. The elbow is the fulcrum, the load is the javelin and the effort comes from the muscles. The fulcrum is quite close to both the effort and the load.

**Types of levers**

**First class levers**

First class levers have the load on one side of the fulcrum and the effort on the other side. This means that a large load can be moved by a relatively small effort. A first class lever is used by a swimmer in the butterfly action. The load is the body, the effort is the stroke and the fulcrum is the longitudinal axis.

**Second class levers**

Second class levers have the load between the fulcrum and the effort. This means that a small effort can move a large load. A second class lever is used by an athlete when kicking a ball. The load is the ball, the effort is the foot and the fulcrum is the position of the knee joint.

**Third class levers**

Third class levers have the effort on one side of the fulcrum and the load on the other side. This means that a small load can be moved by a relatively large effort. A third class lever is used by a swimmer when swimming. The load is the body, the effort is the arm movement and the fulcrum is the shoulder joint.

---

**Exam-style questions**

1. Which one of the following describes a third class lever?
   - A. The effort is in the middle of the lever
   - B. The load is to the right of the fulcrum
   - C. The load is in the middle of the lever
   - D. The fulcrum is on the left of the lever

2. Complete Figure 2 by drawing the lever system identified in 5.1, labelling the fulcrum, effort and load (resistance) [1 mark]

3. Discuss whether second or third class levers are more important to the performance of a sprinter [6 marks]

---

**Study tip**

Remember to warm-up your muscles before undertaking key fitness testing, and follow the procedures for each test carefully. Use the specified equipment, as the tests are reliable and valid.

**Activity**

1. Analyse the pie charts. What do they tell you about the agility of the 11th grade? [3 marks]

2. Complete Figure 3 and label the load, effort and fulcrum [1 mark]

3. Figure 1 shows a footballer kicking a ball. Identify the lever system that operates at the knee joint [1 mark]

---

**Content is presented concisely and to the appropriate depth**

Exam-style questions provide valuable practice to ensure students are fully prepared for the exam.
Fully differentiated photocopiable worksheets

The Workbook and Worksheet Resource Pack provides a coherent set of fully differentiated worksheets to help your students organise their learning.

This pack can be printed and bound into a workbook or photocopied individually if you require more flexibility. It includes plenty of opportunities to practice exam-style questions in a format that mirrors the exam and enables students to track their progress using self-assessment checklists.

2.4 Basic movements

Complete the flow diagram by writing in the basic movements, the joints where the basic movements take place and the sporting actions that illustrate the basic movements at the joints. An example has been completed for you, to get you started, but you could draw or paste in pictures of sporting actions if you would like to.

Revision technique: flow diagrams

It can be much easier to recall information, and most importantly the relationship between different pieces of information, if they are presented visually. Producing a flow diagram to summarise a topic is one way of presenting information visually.

Do you like this technique? Does it work for you? ✖ ✗

A coherent set of fully differentiated worksheets to help your students organise their learning and prepare for revision
Let’s have a look at an extended writing question for levers.

Read the high-level answer provided below and:

1) Highlight the key terms and important information.
2) Add annotations around the outside to define key terms, add any extra detail and comment on things you like about the style of the answer. Imagine you are peer-marking this person’s answer for them.
3) Use the ‘2.5 Levers: extended writing planning sheet’ to reverse plan an answer. Transfer the key information from the answer into the planning sheet. This will help you think about how you might approach answering a similar question in a structured way.

Discuss whether second or third class levers are more important to the performance of a sprinter. (6 marks)

Second class levers operate with high mechanical advantage, which means that they can move heavy loads with relatively low effort.

This is because the effort arm is longer than the load arm. Third class levers operate with low mechanical advantage, which means that they cannot move as heavy loads with the same effort as second class levers. The benefit of these levers is that they produce a greater range of movement and, therefore, can increase distance moved and speed at the end of the lever.

There is a second class lever created as the foot contacts the floor when sprinting, with the fulcrum found at the ball of the foot as a person leaves the ground. The effort for this lever comes from the gastrocnemius muscle with the load being the person’s body weight. At the sprinter leaves the ground, the load (weight) is between the effort and the fulcrum, which makes it a second class lever and brings high mechanical advantage. This is key in driving the weight of the sprinter off the ground.

There are third class levers at most other joints in the body. At the shoulders and elbows, third class levers allow large arm movements to take place, which adds momentum. Even more crucially, at the hips and the knees, third class levers allow large range of movement and greater speed to be created in the legs move forward and backwards during the sprint.

Both these levers are very important to the performance of the sprinter. Without the third class levers, the arms and legs would not be able to move as quickly and would not be able to create the same momentum. The second class lever, with its high mechanical advantage, allows the sprinter to drive off the ground and power forward. It is the combination of both levers in the body that allow a sprinter to run fast.

Second class levers are more important to the performance of the sprinter.
Online support for the 2016 AQA GCSE Physical Education specification

Kerboodle contains a wealth of resources to support the teaching and learning of the new 2016 AQA PE specification.

- **Exam Practice**
  - Editable mark schemes and annotated model answers for all exam-style questions in the Student Book

- **Assessment**
  - End-of-chapter interactive quizzes to test knowledge and understanding.
  - Quizzes are automatically marked for you and scores stored in the Markbook.

Interactive quizzes for students to work through for homework or revision
### Kerboodle Book

An online version of the Student Book with an added bank of tools for students to truly personalize the book. This resource is accessible on a wide range of devices, including tablets.

**Movement analysis**

#### Diagrams, animations, video clips and audio clips, including a series of ‘Top 10 teaching tips’

**Effort**

**Fulcrum**

**Load**

#### Kerboodle answers

- Collects together all the resources linked to the chapter, topic by topic, including links to YouTube clips and weblinks

- New edition contains answers to all the activities in the Student Book and the Workbook and Worksheet Resource Pack

- Editable lesson presentations to accompany each chapter in the Student Book

---

**First class lever**

- A balanced lever; the fulcrum is midway between the effort and the load.
- The fulcrum is quite close to both the effort and the load.
- The lever is a rigid bar that turns about an axis to create movement.
- All movements made by the body are produced by a series of levers working together.

**Second class lever**

- The lever has high mechanical advantage; a large load can be moved with a relatively small effort.
- The fulcrum is about one-third of the way along the lever.
- The entire body acts as a second class lever during a press up.

**Third class lever**

- The lever has low mechanical advantage; a large effort is required to move a small load.
- The load arm is held stationary as the effort is applied.
- The elbow joint is the fulcrum, the hand is the load, and the force required to move the weight is the effort.

---

**Key terms**

- **Fulcrum**: The fixed point at which a lever turns or is supported. The load is the weight or ‘resistance’ that the lever must move. The effort is the force required to move the load. It can also be referred to as the ‘axis’.

- **Effort**: The force required to move the load. The fulcrum is quite close to both the effort and the load.

- **Load**: The weight or ‘resistance’ that the lever must move.

---

**Activity 2.1**

1. **a)** During the take-off phase of a long jump, a second class lever is being used at the knee.

2. **b)** During the upward phase of a press up there is flexion at the elbow joints and adduction at the shoulder joints.

3. **c)** When performing a bicep curl, a third class lever is being used at the elbow.

---

**Worksheet 2.1**

- **a)** Using a small hand-weight, or a similar object, perform a bicep curl.
- **b)** Take part in, or watch a video of, the take-off phase of a long jump.
- **c)** What sort of lever is being used by the elbow?

---

**Movement analysis: Answers to activities in the Student Book**

1. **a)** During the take-off phase of a long jump, a second class lever is being used at the knee.

---

**© Oxford University Press, 2016**
Also available from Oxford

Video Analysis Assessment Toolkit

NEW PRICE
£25.00
+VAT

Ideal KS3 support for teaching without National Curriculum levels.
Includes:
- Cricket & Rounders
- Athletics
- Tennis, Badminton & Table Tennis
- Gymnastics

Visit www.oxfordsecondary.co.uk/pe to find out more

BTEC Level 2 Firsts in Sport

Considering BTEC for your 14-16 students?
Second editions of the best-selling BTEC Sport resources.

ORDER AQA GCSE Physical Education Third Edition.

Please complete the form below and return it to: Oxford University Press, North Kettering Business Park, Hipwell Road, Kettering, Northants NN14 1UA*

*FREEPOST if you download a postpaid barcode at www.oxfordsecondary.co.uk/orderform

☐ Evaluation Pack (free for 90 days)
  978 019 837524 1 Spring 2016 £20.00

☐ Student Book
  978 019 837025 3 April 2016 £20.00

☐ Workbook and Worksheet Resource Pack
  978 019 837026 0 April 2016 £125.00

☐ Kerboodle**
  978 019 830909 3 Summer 2016 £150.00 + VAT

☐ Kerboodle Book
  978 019 837028 4 Summer 2016 £150.00 + VAT

To arrange a free in-school Kerboodle demo, contact your local Educational Consultant directly using www.oxfordsecondary.co.uk/repfinder

Name

Job title

School address

Postcode

Email †

**Prices for Kerboodle products are for an annual subscription for unlimited users. For full terms and conditions, visit www.oxfordsecondary.co.uk/Kerboodle-terms. Prices and publication dates are correct at the time of going to press and are subject to change. Brand new content for the 2016 specification will be added in June 2016. Content for the old specification will remain available until August 2018.

† By giving us your email address you are agreeing to us sending you emails about Oxford University Press products. This includes the relevant email newsletter which includes the latest news, information, discounts and offers. Your email will not be passed onto third parties outside Oxford University Press.