

GCE Physical Education 2016

Component guide 4: The role of technology

Contents

Introduction	1
Overview of changes	1
Key content	2
Topic 2: Exercise physiology and applied movement analysis	2
Topics 2.1.1 and 2.1.5	2
Topic 2.2.9	2
Topic 2.3.5	3
Topic 3: Skill acquisition	3
Topic 3.6.3	3
Topic 5: Sport and society	3
Topics 5.4.3–5.4.5	3
Topics 5.5.1 and 5.5.2	4
Topic 5.6.2	4
Topic 5.7.1	5
Topic 5.7.3	5
Detailed content changes	6
Topic 2: Exercise physiology and applied movement analysis	6
Topic 3: Skill acquisition	6
Topic 5: Sport and society	6
Delivery approaches including ideas for practical delivery	7
Quantitative skills guidance	9
Sample questions	9
Resources and references	10
Useful websites	10

Introduction

The specification has been developed in consultation with the teaching community, higher education, learned societies and subject associations. Tutors from a range of schools and colleges – in focus groups, phone interviews and face-to-face conversations – have given feedback at each stage and have helped us to shape the specification. Physical Education academics in UK universities have helped us understand how to build on the strengths of the 2008 A level specification and advised on how progression to undergraduate study could be improved.

Component guide 4: The role of technology gives an overview of the new specification relating to this topic, to help you get to grips with the changes to content and assessment, and to help you understand what these mean for you and your learners.

Overview of changes

From September 2016, GCE Physical Education will be a linear qualification. This means that all examinations must be sat at the end of the two-year course. From September 2016, AS level Physical Education will be a stand-alone qualification. This means that it cannot be used to contribute towards an A level Physical Education grade. More information about the changes to subject content are given later on in the guide.

Each award will have two examinations: a scientific exam and a psychological and social exam. This is a change from 2008. There is an increased focus on the theoretical content, now worth 70 per cent of the grade. Both examinations have a requirement for technology and this topic falls across all units and is embedded across all examinations.

Topic 3: Skill acquisition is in both A level Year 1 and the full A level, whereas both Topic 2: Exercise physiology and applied movement analysis and Topic 5: Sport and society contain some technology to study at Year 1 and some at Year 2. A Level topics are shown in bold type throughout the booklet.

Key content

The very nature of this section means that technology is changing. The world of sport is ever evolving. This topic includes the facility for Edexcel to keep the specification live and up to date. Questions will be worded to allow learners to demonstrate their understanding of how technology is used in physical activity, without having to know specific examples. In the delivery approaches section of this booklet there are several ideas about how centres can keep up to date with what athletes are doing to assist with this knowledge.

Topic 2: Exercise physiology and applied movement analysis

Topics 2.1.1 and 2.1.5

Learners will need to keep abreast of any dietary advice changes and what athletes are doing to manipulate their diets. There may be changes in research. This includes understanding what athletes do to prepare for performance, what diet they take during their performance and what diet they use for recovery. This will also include up-to-date supplements being used by athletes. This doesn't just include the 'new things on the market', it covers all the advice athletes are using at the time of the learners answering their exam.

For example, as this document is written an example of a supplement athletes may use is nitrous oxide or beetroot juice which causes arteries to dilate, delivering more blood to the muscles and therefore increasing oxygen delivery. This also reduces blood pressure.

The type of question that could be asked to allow learners to use their own examples is: 'Using a supplement that you have studied... '.

Throughout the diet section learners need to have an understanding of what is taken, and what effect it may have on performance. It is important to consider the type of athlete that might take it (endurance, high intensity or repeat sprint activity) and when they might take it, i.e. before, during or after a performance or training.

Topic 2.2.9

There is also a heading in this section of the specification that states that learners need to know contemporary technologies used by the performer and coach to monitor fitness and performance.

This means any technology that athletes or coaches are using to see how an athlete is training. Currently this could include heart rate monitors, apps to track how far an athlete has run and other forms of wearable technology. However, the technology that athletes use is constantly changing and anything new being used to monitor fitness can be used by learners as examples. There is no requirement for the learners to know a specific item.

Topic 2.3.5

This section also includes contemporary recovery methods in the A level. Again, this includes any current ways that athletes use to recover. For example, cryotherapy is a recovery method that athletes currently use. There is a need for centres to keep up to date with what athletes are doing, to have a knowledge and understanding of how effective these methods are and what effect they have on the performer.

Topic 3: Skill acquisition

Topic 3.6.3

Technology is also used in giving feedback to athletes in order to optimise performance. Again, how this is done will change over time. Learners should be able to give some up-to-date examples of how athletes get feedback about their performance. For example, at the moment this might include accelerometry data from GPS units and the data they give back to coaches and performance about a player. When learners sit their exam they should be able to discuss any current methods athletes use to get information about their performance.

Topic 5: Sport and society

Topics 5.4.3–5.4.5

Contemporary forms of deviance are also included in this section. We are always behind with how athletes cheat because the testers are always behind the athletes. The World Anti-Doping Agency website (WADA) is the best place to keep up to date with what is happening

(www.wada-ama.org).

Watching sport, sport in the news and sports updates as well as reading sport sections in broadsheet newspapers are good ways to know how athletes are using deviant behaviour. Learners need to be able to discuss how technology is used to combat deviance. The WADA website is also the one to use when learners need to be able to have a discussion about the effectiveness of WADA in combating drug use. Being able to answer questions such as: What is WADA doing to combat doping? What successes has WADA achieved? What are the issues facing WADA? How effective is WADA? Learners will need contemporary examples to support arguments and discussions they make when answering questions.

Topics 5.5.1 and 5.5.2

Learners need to have a knowledge and understanding of the impact of technology on the viewing experience. This section is about learners keeping up to date with media and sport. The easiest way for them to do this is to watch sport regularly on the TV. They need to have knowledge and understanding about the advantages and disadvantages of the development of specific sports media packages and the growth of 'pay- per-view'.

Topic 5.6.2

Learners will need knowledge and understanding about how talent is currently identified and developed in both the UK and Australia. The best websites to access this information are:

- www.ausport.gov.au Currently under AIS and pathways, this website has good information about how the Australian's do this.
- For the UK the best websites to access information are www.uksport.gov.uk, www.teamgb.com and www.sportengland.org.

This section includes whatever system is employed by that country at the time. Currently, for example, learners would need to be able to discuss the elements of the 'World Class Programme' (UK) and the 'Winning Edge Strategy' (Aus). This would need to go back to grass roots of how athletes are identified and then the support put in place for them to get to elite such as funding and education, e.g. Australia's Personal Excellence Programme. However, use of these websites to keep up to date with what these two countries are doing is important as the system may have

changed or been amended by the time this document is read. Perhaps following an elite athlete from each country on Twitter could be a way of learning more about this for learners. They could follow one experienced athlete and one junior athlete.

Topic 5.7.1

The impact of wearable technology on participation is also in the specification. Again, what athletes wear will change. Learners will need a knowledge and understanding about the technology and how it affects performance, including advantages and disadvantages.

- www.theguardian.com/technology/2015/aug/09/wearable-technology-sports-athletes-personal-lives

This article gives some discussion about wearable technology.

Topic 5.7.3

Participation trends in the UK in the 21st century are a requirement of the specification. The Sport England website (www.sportengland.org) is a useful resource for this as it includes the national picture and the Active People Survey results, which show the participation trends in different groups. Question 9 in the AS Sample Assessment Materials paper is a good illustration of the sort of questions that may be used with this. Being able to interpret the information and link it to other areas of the specification is important. Being able to discuss the trends and why they may happen is crucial knowledge for learners. Question 10 in the Psychological and Social Principles paper in A level Sample Assessment Materials is also a good example of this.

Detailed content changes

The major differences between 2008 and 2016 come in the level of detail required in the topic. Theory is now worth 70 per cent so there is an increased content detail.

Topic 2: Exercise physiology and applied movement analysis

Dietary manipulation was included in the 2008 specification. The use of ergogenic aids for recovery as well as preparation for sport was a topic in 2008. Although this specification does not use the word 'ergogenic aids' knowledge of technology, supplements and recovery methods is essentially the same area of knowledge.

Use of technology for feedback and monitoring were also topics in 2008. Technology for training enhancement was also included in 2008.

There is now an explicit need to be up to date with these topics by the use of the word contemporary, and specific items are not detailed, with the view that they will change significantly over the life of the specification.

Topic 3: Skill acquisition

Although the 2008 specification did not include skill acquisition, many centres may have included feedback as part of their AS coursework. There is now a need to know the technology used to support feedback. This is something learners may have also looked at under 'ergogenic aids' in Unit 3 of the 2008 specification.

Topic 5: Sport and society

The 'participation in sport and recreation' unit of the 2008 specification at AS had a section on deviance in sport and specifically mentioned future developments and the role of WADA, as well as performance-enhancing drugs. The new specification asks about the effectiveness of WADA which is a good example of a topic that learners can debate. There is a new topic area about technology to combat deviance.

The impact of technology on the viewing experience is new.

In the 2008 specification learners studied the history of the talent ID system in Australia and the UK in both units 1 and 3, but there has been no specific requirement to make this knowledge contemporary. Now learners will need to know the up-to-date information from both countries systems.

The 'participation trends in the 21st century' topic links to the knowledge that was required for 2008's healthy active lifestyles but this is a very specific topic area that is new. Wearable technology may have been covered in 2008 under 'ergogenic aids' but it was not an explicit category as it is now.

Delivery approaches including ideas for practical delivery

This whole topic area involves being contemporary. As such, it is difficult to be explicit in the specification about exactly what will be current at the time of studying the course, given that the specification will last for several years.

Therefore, there is a need for centres to keep up to date with relevant information. One way of doing this is to have an elite athlete talk in your school, as you will hear first-hand from them what they are doing in training. It is also a good idea to have a PE Twitter account and to follow several elite athletes so that they may tweet about things they are doing in their training, or you can ask them some of the questions.

Another way is for learners to keep a scrapbook under these topic headings and to collect articles on media, supplements, drugs and so on. Reading broadsheet newspapers sports sections at the weekend is a good way of completing such a scrapbook. Learners could also have a rota for regular weekly news updates that they lead.

A visit to a university where elite athletes train and asking them for up-to-date information may be another useful element to your course. Listed below are several websites that learners and staff will need to access regularly to see what is changing. It may be worth creating a department blog where they can have direct links to these websites from one central place. You could also then add to it links to past papers and so on.

This whole topic area lends itself to research from learners as there is a need to keep up to date.

Topic	Ideas for delivery
Effectiveness of WADA	<ul style="list-style-type: none"> Learner research on WADA and then debate how effective they are in a class discussion. Courtroom scenario where they have to decide the fate of an athlete. Some learners act for the defence and some the prosecution. They can use a <u>real scenario or learners can invent one.</u>
Participation trends in 21st century	<ul style="list-style-type: none"> Finding out stats and graphs of participation trends and commenting on them. What do the graphs tell you? Then linking these to other sections of the course to be synoptic – why might <u>these trends be the case?</u>

UK and Australia	<ul style="list-style-type: none"> • Create case studies of two current athletes. Research an athlete from each country and in doing so finding out about the systems each country is using. • Use of websites www.ausport.gov.au and www.teamgb.com. • How have these athletes been selected? Where are they training? Can you pick someone with a Twitter account and tweet them questions? Can you get them into school to talk to the class?
Technology to support feedback	<ul style="list-style-type: none"> • Use of sport specific websites such as www.teamsky.com. Use of governing body websites. Watching sport on the TV regularly and following athletes on Twitter.
Media	<ul style="list-style-type: none"> • Watching sport regularly on the television and being able to comment on the impact of technology on the viewing experience. This can be a class discussion. • The advantages and disadvantages of the development of specific sports media packages and the growth of 'pay-per-view' is another debate area.
Supplements	<ul style="list-style-type: none"> • Learners to research different supplements and do a presentation on each one they have heard of athletes taking.
Recovery methods	<ul style="list-style-type: none"> • Reading articles about recovery, following athletes on Twitter and watching sport on the television.

Quantitative skills guidance

There are some topics in this section which lend themselves to quantitative skill for example, health of the nation and commenting on graphs of participation trends, or media statistics of no of viewers of particular sports and so on. Learners being able to link these statistics to knowledge from other areas of the course and the ability to be synoptic will be important. Learners need to be able to draw on all their knowledge when commenting on graphs and tables.

Sample questions

Regular testing of learners on the key terms in the glossary that are part of the specification is important (see Appendix 7, page 88).

When practicing questions ensure that tutors and learners are using the command words in the specification and that learners understand the requirements of each command word.

Please see the Sample Assessment Materials for examples of questions. Question 8b on the Scientific Principles paper in the A level SAMS is an example. Question 6 and question 10 in the Psychological and Social Principles paper are further examples.

To ensure understanding, questions could be given to learners starting:

- Diet is manipulated...
- Technology is used...
- WADA...
- The UK and Australia...
- Recovery methods used by athletes...

Resources and references

Useful websites

Deviance:

- www.wada-ama.org

Talent identification in GB and Australia:

- www.ausport.gov.au
- www.bbc.co.uk/sport
- www.teamgb.com
- www.sportengland.org

Wearable technology:

- www.theguardian.com/technology/2015/aug/09/wearable-technology-sports-athletes-personal-lives

Participation trends:

- www.sportengland.org

Fitness and performance:

- www.teamsky.com

Governing body:

- www.uksport.gov.uk

Generic sites:

- www.pecentral.org
- www.sportsaid.org.uk
- www.olympic.org/ioc
- www.clearinghouseforsport.gov.au