



**General Certificate of Secondary Education
June 2012**

Physical Education

48903

(Specification 4890)

**Unit 3: Knowledge and Understanding for the
Active Participant (Full Course and
Double Award)**

Final

Mark Scheme

Mark schemes are prepared by the Principal Examiner and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation events which all examiners participate in and is the scheme which was used by them in this examination. The standardisation process ensures that the mark scheme covers the candidates' responses to questions and that every examiner understands and applies it in the same correct way. As preparation for standardisation each examiner analyses a number of candidates' scripts: alternative answers not already covered by the mark scheme are discussed and legislated for. If, after the standardisation process, examiners encounter unusual answers which have not been raised they are required to refer these to the Principal Examiner.

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Section A – Part 1 Multiple choice

Award **one** mark for each correct answer.

1 Which **one** of the following activities would be most suitable for an ectomorph?
(1 mark)

High jump

2 Which **one** of the following describes the Fartlek training method? (1 mark)

Speed play

3 Which **one** of the following is the term used for the compulsory Physical Education programme provided by schools? (1 mark)

National Curriculum

4 Which **one** of the following activities would be **least** suitable for an 11 year old? (1 mark)

Weight training

5 Which **one** of the following does **not** usually decrease with age? (1 mark)

Skill

6 Which **one** of the following is a social factor that can affect participation in physical activity? (1 mark)

Peers

7 Which **one** of the following is an example of etiquette? (1 mark)

Shaking hands with your opponent at the end of a badminton match

8 In which **one** of the following do female sports performers tend to have an advantage over male sports performers? (1 mark)

Flexibility

9 Which **one** of the following activities would be most suitable for an introvert?
(1 mark)

Cross country running

10 Which **one** of the following user groups is least likely to receive reduced prices at sports facilities?
(1 mark)

Shift workers

Section A – Part 2 Short answer questions

11 Schools can influence participation in physical activity in different ways.

11 (a) Explain how teachers can have a **positive** influence on participation. *(2 marks)*

Award up to **two** marks for an explanation of how teachers can have a positive influence on participation.

- General positive teaching attitude or enthusiasm/ can encourage participation.
- Experience or expertise of staff/ in certain activities can encourage interest in that activity.
- The playing ability of staff/ as they act as role models.
- Making the activity fun or challenging/ can make you want to take part.
- Offer extra-curricular activities/ to promote participation in a particular sport.

Accept any other suitable response.

11 (b) Explain how school facilities can have a **negative** effect on participation. *(2 marks)*

Award up to **two** marks for an explanation of how school facilities can have a negative effect on participation.

- Poor or old or damaged facilities/ students will not be encouraged to take part.
- Lack of facilities/ will prevent participation.
- Having to use off-site facilities/ doesn't allow easy access or might make it more expensive or shortens time to play.
- Dual use facilities/ reduces time availability.

Accept any other suitable response.

12 Movement is brought about by the muscular and skeletal systems working together.

Using an example, explain how muscles and bones work together to produce movement. *(4 marks)*

Award **one** mark for identifying a relevant example.

Award a further **three** marks for an explanation of how muscles and bones work together to produce movement.

- Muscles are attached to bones via tendons.
- The origin is attached to the bone that doesn't move/ the insertion is attached to the bone that moves.
- Muscles can only pull/ and are arranged in pairs (antagonistic).
- One contracts (shortens or flexes or agonist or prime mover)/ and one relaxes (lengthens or antagonist).
- Ligaments keep the joint stable.
- Movement can only occur at a joint.

13 (a) Describe what is meant by an ‘amateur sports performer’. (2 marks)

Award up to **two** marks for a description of an amateur sports performer.

An amateur sports performer is someone who takes part in an activity as a hobby/ rather than for financial gain/ not their main job/ take part for fun/ could be at a lower level.

13 (b) State **three** ways an amateur sports performer could obtain funding. (3 marks)

Award up to **three** marks for ways an amateur sports performer could obtain funding.

- Sponsorship deals
- Occupation – a job that allows paid time off to train and compete.
- Expenses payments
- Scholarships – universities or schools can offer sports scholarships
- Lottery grants
- NGB grants
- Parental contributions
- Fundraising
- Donations

NB Funding must imply financial gain and not material gain.

14 Sports quiz programmes are often on television.
State **two** other types of television programme that promote or cover sport and give an example of each. (4 marks)

Award **one** mark for each type of programme and **one** further mark for the example, up to a maximum of **four** marks (2 x 2 marks).

- Live sports coverage/ eg Ford Super Sunday
- Highlights programmes/ eg Match of the Day
- Documentaries/ eg Inside Sport
- News bulletins/ eg Sky Sports News
- Educational programmes/ eg Peak Performance
- Entertainment/ eg Soccer AM

Accept any other suitable response.

15 Increased flexibility can help to improve performance.

15 (a) State what is meant by the term ‘flexibility’. (1 mark)

Award **one** mark for stating what flexibility is.

- The range of movement at a joint.

15 (b) Using an example from a named physical activity, explain how increased flexibility can help to improve performance. <i>(3 marks)</i>

Award up to **three** marks for correctly explaining how increased flexibility can improve performance. Award **one** mark for the example and a further **two** marks for the explanation.

- A games player can increase their stride length/ to get into position quicker/ to receive a pass.
- A back crawl swimmer will have a longer pull/ to go faster/ to win a race.
- A gymnast can perform a difficult move with style/ to gain more marks/ to win a competition.

Accept any other suitable response.

16 Identify three reasons why the amount of leisure time has increased and explain one effect this has had on the leisure industry. <i>(4 marks)</i>
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Award **one** mark for each reason identified as to why leisure time has increased up to a maximum of **three** marks.

- Technological advances
- Higher unemployment
- Shorter working week
- Part time work
- People retiring early
- Job share arrangements
- People are living longer
- Flexi-hours
- Less working hours in the day

Award **one** further mark for an explanation of the effect this has had on the leisure industry.

- Growth of the leisure industry
- Increased demand for leisure
- Increased demand for facilities
- More jobs available
- More money or revenue

17 People are encouraged to live a healthy active lifestyle.

Using **five** examples, state how people could make their everyday lifestyle more healthy **and** active. *(5 marks)*

Award up to **five** marks for examples of how people could make their everyday lifestyle more healthy **and** active.

NB To achieve maximum marks students must give both healthy **and** active examples (accept 4+1).

- Use the stairs instead of the escalator or lift.
- Use a bike as a form of transport where possible.
- If you use the bus get off a stop earlier to walk part of the journey.
- Don't allow yourself to be driven short distances, walk instead.
- Do some form of exercise – gardening, hoovering, active sport.
- Follow a balanced diet or eat more fruit and vegetables or '5 a day'.
- Eat less fats or sugars or salts.
- Ensure they have suitable amounts of rest.
- Regular medical check-ups.
- Socialise with others.
- Have a work-life balance.
- Maintain personal hygiene.
- Do not use drugs eg alcohol, tobacco.
- Less TV or less time on computer.

Accept any other suitable response.

Section B – Questions based on the preliminary material

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| <p>18 (a) During his Community Sports Leadership Award course, David had to organise a half-day football tournament for local primary schools.</p> <p>Describe a type of competition that would allow maximum participation if five teams were involved. <i>(2 marks)</i></p> |
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Award up to **two** marks for a description of the type of competition.

- Round robin or league/ where all teams play each other/ all teams play the same number of games.

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| <p>18 (b) (i) Name one type of strength that David would use in the 100 metres. <i>(1 mark)</i></p> |
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Award **one** mark for naming a type of strength.

- Explosive
- Dynamic
- Static

- | |
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| <p>18 (b) (ii) Using an example, explain why improved levels of the strength you named in 18 (b) (i) would help David in the 100 metres. <i>(3 marks)</i></p> |
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Award **one** mark for the example and **two** further marks for explaining why improved levels of strength would help David in the 100 metres.

- Explosive strength – when leaving the blocks/ improved levels will give an initial burst of speed/ to get in front or win the race.
- Dynamic strength – during the race/ improved levels maintain form, speed or cadence/ to maintain or improve position.
- Static strength – when holding the set position/ improved levels will be able to hold the position/ and prevent a false start.

NB The type of strength identified in 18(b)(i) must be correct for marks to be awarded in 18(b)(ii).

If the example does not match the type of strength given in 18(b)(i) no marks can be awarded.

18 (c) David regularly coaches junior athletes at his local athletics club.

State and describe **three** qualities that David needs to be an effective coach.
(6 marks)

Award **one** mark for stating and **one** mark for describing each quality that David needs to be an effective coach, up to a maximum of **six** marks (3 x 2 marks).

- Patience/ in order to ensure that skills are acquired and developed appropriately.
- Empathy/ to understand the needs of the performer.
- Good communication/ to get his point across clearly.
- Knowledge/ to improve or analyse performance effectively.
- Good leadership/ to be able to take the performer forwards.
- Organised/ to deal with different abilities and situations.
- Previous experience of the event/ to offer an insight to what is involved.
- Enthusiastic or motivated or supportive/ to encourage children to do well or take part.
- Confidence/ so that he can coach effectively without being intimidated.
- Good listener/ in order to respond to the needs of the performer.
- Skilful/ to be able to demonstrate correctly.
- Reliable/ turning up on time.
- Creativity/ makes coaching interesting so that they don't get bored or stay focused.

18	(d)	<p>As a 100 metre sprinter, David uses interval training as part of his training programme.</p> <p>Describe what is meant by ‘interval training’. Using your knowledge of training zones and the principles of training, explain how interval training can be used to improve performance in a 100 metre race.</p> <p>(Answer in continuous prose)</p>	<i>(8 marks)</i>
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Please use the following grid to award a mark for both the content and the Quality of Written Communication (QWC) based on the following information.

QWC is part of the award of marks in level marked questions only. In these answers the quality of the content is assessed and a level mark awarded accordingly to that content. As is sometimes the case, the knowledge of physical education may be sound at a particular level but the examiner may not be sure as to whether there is quite enough to raise the mark **within** that level. In this case the examiner should consider the QWC of the answer. QWC that fulfils the criteria for the level should lead to the rise in the mark but where the QWC does not fulfil the criteria, the answer should remain at the mark first thought appropriate.

In cases where QWC has been used in the award of marks, the examiner should indicate this in a comment box saying ‘QWC raised mark’. QWC cannot be used to raise a candidate’s mark into the next level.

Level 3	<p>6 – 8 marks</p> <p>Interval training described and applied. Full explanation of training zones and at least two of the principles of training or two aspects of overload identified and applied and the link to how they can be used to improve performance clearly made.</p> <p>Students spell, punctuate and use rules of grammar accurately and use a wide range of specialist terms precisely.</p>
Level 2	<p>3 – 5 marks</p> <p>Interval training described. Some explanation of training zones and at least one of the principles of training identified with application and the link to how it can be used to improve performance made.</p> <p>NB No explanation of training zones OR no explanation of principles of training (maximum 3 marks).</p> <p>Students spell, punctuate and use the rules of grammar with reasonable accuracy and use a range of specialist terms appropriately.</p>
Level 1	<p>1 – 2 marks</p> <p>Interval training described but limited attempt made to explain training zones and the principles of training.</p> <p>Students spell, punctuate and use the rules of grammar with some accuracy. Limited use of specialist terms.</p>
0 marks	No creditworthy material.

Examples of content could include:

- interval training is periods of work and periods of rest, with variations of the two. For David it should be short interval training with short periods of work up to approx 15 seconds at maximum levels with realistic recovery time possibly up to 2 minutes
- training needs to be above the anaerobic training threshold or in the anaerobic training zone, which is 80-90% of maximum heart rate to improve performance. Details of actual heart rate levels may be calculated
- principle of specificity can be applied by making the work specific to the activity so it should be carried out on the track using muscle groups used in the action possibly also including practice dipping at the finish or coming out of the blocks
- principle of progression can be applied by gradually building up the workload and allowing the body to adapt at each small step
- principle of overload is applied by ensuring the body is challenged to work harder than it usually is. This can be done by manipulating the frequency by increasing the number of interval sessions in the week. The intensity of the interval session can be increased by increasing the number of sets or increasing the number of repetitions in each set. The time can be manipulated to the rest time between intervals
- tedium considered in relation to motivation.

Example Answers

Level 1 (1 mark)

Interval training is intervals of work and intervals of rest which David can do on the track. David will need to be in his anaerobic training zone if the interval training is going to help improve his performance.

Level 2 (4 marks)

Interval training is a good training method for David as he can do it on the track so he does periods of work using his sprinting and periods of rest in between. This means he is applying the principle of specificity using a training method that is suited to his sport. David can make the intervals the same distance as his sprint race or slightly harder so he puts himself under pressure. Because sprinting is anaerobic David will need to work in his anaerobic training zone which is at least 80% of his maximum heart rate and hard work.

Level 3 (8 marks)

Interval training is periods of work and periods of rest, as a sprinter this training method is suitable as he can do repetitions of his sprinting distance on the track. This is the principle of specificity. It is important that David uses the principle of overload and puts his body under pressure so he can improve, he can do this by changing the intensity of his interval session by adding repetitions to each set or by adding a set. He needs to build this up gradually to use the principle of progression so he does not get injured. He could also increase the frequency of his training sessions to make sure he improves, instead of 2 interval sessions he could do 3 sessions a week within his training programme. He can tell if he is working hard enough by checking his heart rate which should be in the anaerobic training zone and is 85% of his maximum heart rate. Maximum heart rate is 220 – age.

19 (a) David found the Youth Olympic Games stressful.

19 (a) (i) What is meant by the term ‘anxiety’? *(1 mark)*

Award **one** mark for stating what anxiety is.

- Feeling nervous or apprehensive or tense or stressed or worried.

19 (a) (ii) Explain how anxiety could have affected David’s performance when competing at the Youth Olympic Games. *(2 marks)*

Award **two** marks for explaining an effect of anxiety on performance when competing.

- Likely to lose concentration/ and make mistakes or perform poorly.
- Increased arousal/ helping to focus on the task or improve performance.
- Releasing adrenaline/ to prepare the body for performance.
- Butterflies or feeling sick/ results in poor performance.
- Muscles may tighten up/ negative effect on performance.

NB Only credit effect of anxiety not definition.

19 (b) Many companies sponsor elite performers.

Describe the advantages that a local company might gain from sponsoring David. *(3 marks)*

Award up to **three** marks for a description of the advantages a local company might gain from sponsoring David.

- Increased revenue or increased sales
- Increased profile by association with successful performer
- Advertising of the company
- Cheaper than TV advertising
- Tax benefits
- Develop a good relationship with the local community

19 (c) The sports nutritionist advises that fibre is an important nutrient in David's diet because it keeps his digestive system healthy.

Name **three** other nutrients that are important in David's diet and explain how each may help his performance in training and in competition. *(6 marks)*

Award **one** mark for each nutrient identified and **one** further mark for explaining how it helps his performance, up to a maximum of **six** marks (3 x 2 marks). The mark for explanation **must** be linked to how it helps performance and not simply explaining what the nutrient is for.

- Protein/ will help with the growth and repair of muscle needed when sprinting or training to reduce recovery time.
- Carbohydrate/ to provide energy during training and competing to his maximum.
- Water/ to maintain fluid levels or to avoid dehydration to continue to train or compete effectively.
- Fats/ additional energy source to continue to train or compete effectively.
- Minerals eg iron/ increase the body's efficiency to carry oxygen to the working muscles of the body or to produce energy to continue to train or compete effectively.
- Vitamins eg vitamin C/ to protect against disease and infection to enable training or competing to continue.

NB Named vitamins and minerals correctly linked to how it helps performance are acceptable.

<p>19 (d)</p> <p>A good recovery routine will be important for David because he trains and competes so much</p> <p>Describe the best way for David to recover after a hard training session or competition. Explain why a good recovery routine is necessary and how it will benefit his future performance in training or in competition</p> <p>(Answer in continuous prose)</p>	<p><i>(8 marks)</i></p>
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Level 3	<p>6 – 8 marks</p> <p>Full description of the recovery process and full explanation of why it is needed and its benefits.</p> <p>Students spell, punctuate and use rules of grammar accurately and use a wide range of specialist terms precisely.</p>
Level 2	<p>3 – 5 marks</p> <p>Description of recovery process and some explanation of why it is needed and its benefits.</p> <p>Students spell, punctuate and use the rules of grammar with reasonable accuracy and use a range of specialist terms appropriately.</p>
Level 1	<p>1 – 2 marks</p> <p>Brief description of the recovery process and limited explanation of why it is needed and its benefits.</p> <p>Students spell, punctuate and use the rules of grammar with some accuracy. Limited use of specialist terms.</p>
0 marks	<p>No creditworthy material.</p>

Examples of content could include:

- active cool down consists of gentle jog stretching to maintain elevated breathing rate and blood flow
- dietary factors need to replenish stores lost during exercise fluids to prevent dehydration carbohydrate to replenish energy stress
- expiration of breath removes carbon dioxide and other waste from our lungs increased oxygen taken in and delivered to muscles to repay oxygen debt perspiration helps with temperature control and removes excess water lactic acid is flushed from the system all the removal of waste products leaves the body clear of toxins and able to continue with training
- to repair and help prevent muscle soreness eg massage to remove toxins, ice bath.

Example Answers

Level 1 (1 mark)

The best way for David to recover after his training is to do a cool down, this will hopefully stop him feeling stiff the next day.

Level 2 (4 marks)

David would need to do a cool down after each training session. This would consist of a slow jog and some simple stretches. The cool down is to get rid of waste products that will have built up in his body during his training. If he doesn't do this his muscles will ache the next day and it may be difficult to train. A massage after training will help his muscles recover. It will be important for David to make sure he eats the right food after he trains so he can carry on training.

Level 3 (8 marks)

It will be important that David does an active cool down after training to help him recover. This would mean a slow jog to bring his heart rate down and stretches of all the main muscle groups. The active cool down helps maintain blood flow to flush lactic acid out of his system and stop blood pooling. It helps to repay the oxygen debt built up during training. David could have an ice bath and massage to help his muscles recover and stop muscles aching so he can carry on training. He will need to replace fluid lost during training by drinking water and eat the correct foods so he has the energy to train properly the next day.