

OXFORD Study Buddy

Revision and
Exam Guide

QCE
PHYSICAL
EDUCATION

UNITS 3 & 4

VOLUME 1

WRITTEN BY
MATTHEW JOHNSON

KATE RUSSELL

ILLUSTRATED BY
JOSHUA SCOTT



OXFORD

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THE LAST 24 HOURS SURE
HAVE BEEN RUFF! I MEAN,
I'M NOT EVEN WEARING
ANY PANTS ...
TIME TO **DIG DEEP**, FOCUS
ON THE **PAW-SITIVES** AND
PLAN FOR YOUR SUCCESS!
DON'T STOP **RETRIEVIN'**!

SHREDDED



CHAPTER

1

STUDYING FOR SUCCESS

Before you start studying for your QCE Physical Education exam, it's important to set yourself up for success. That's exactly what this chapter is designed to do, so thanks for stopping by!

As soon as it's time to start studying for the external assessment, we recommend that you work through this whole chapter before doing anything else! You might do this at the start of the school year or at the start of your exam study period, but whatever you do, don't skip this chapter; it contains a lot of really important information and tips that might just give you the edge you're looking for.

YOUR THIRST FOR KNOWLEDGE IS **CRYSTAL CLEAR!** COMPLETE THIS CHAPTER TO SCORE YOUR FIRST KNOWLEDGE CRYSTAL! GOOD LUCK!



1.1

OVERVIEW OF QCE PHYSICAL EDUCATION UNITS 3 & 4

In this section, we will:

- provide a brief overview of how the QCE Physical Education Units 3 & 4 course is structured
- list all of the concepts and topics that you will need to learn and understand
- explain how you will be assessed.



1.1.1

Resource: Physical Education General Senior Syllabus

Study tip

The Physical Education General Senior Syllabus sets out all of the information you are expected to learn and also provides important information on how you will be assessed.

In this chapter, we have summarised all of the key information relating to external assessment you need to know. The QCAA may update the syllabus from time to time, though, so it's important to make sure you are using the most current version!

Make sure you visit the QCAA website and download a copy of the Physical Education General Senior Syllabus. Read it carefully before you sit your external assessment. To save you time, we've also included a link to it on your [obook assess!](#)

QCE PHYSICAL EDUCATION UNITS 3 & 4 COURSE STRUCTURE

The most important document supporting the QCE Physical Education course is the Physical Education General Senior Syllabus. It sets out all the content – known as subject matter – that you will be expected to learn. It also provides important information about how you will be assessed.

QCE Physical Education is a course of study consisting of four units (i.e. Units 1 & 2 and Units 3 & 4) taught over two years. In this revision and exam guide, however, we will only be focusing on the subject matter in Unit 4 – Topic 1 of the course. This is because only that content will be examined on the external assessment. The subject matter you will be learning about in Unit 4 – Topic 1 is summarised in Table 1. Each unit is developed to a notional (i.e. estimated) time of 55 hours of teaching and learning, including assessment.



THE PUGGLE IS REAL ... BUT I'M HERE TO HELP!



Course structure for QCE Physical Education Units 3 & 4

Unit 3 Tactical awareness, ethics and integrity and physical activity	Unit 4 Energy, fitness and training and physical activity
<p>Topic 1: Tactical awareness integrated with one selected 'Invasion' or 'Net and court' physical activity</p> <p>Topic 2: Ethics and integrity</p>	<p>Topic 1: Energy, fitness and training integrated with one selected 'Invasion', 'Net and court' or 'Performance' physical activity</p> <p>Subject matter:</p> <ul style="list-style-type: none"> • Energy requirements for physical activity • Energy systems • Fitness requirements for physical activity • The role of oxygen in performance • Training zones • Principles of training • Training methods • Fatigue and recovery in training • The theory of periodisation

Table 1

Modified from Physical Education General Senior Syllabus 2019 v1.1
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QCE PHYSICAL EDUCATION UNITS 3 & 4 ASSESSMENT STRUCTURE

You will be expected to complete a total of **four summative assessments** in QCE Physical Education Units 3 & 4. Summative assessments are designed to evaluate your understanding of the subject matter and compare your performance against the understanding of students from across the state.

Three of these assessments are internal and one is external, but all will contribute to your Australian Tertiary Admission Rank (ATAR) calculation and to your Queensland Certificate of Education (QCE).

INTERNAL ASSESSMENTS

- Schools will develop **three internal assessments** for QCE Physical Education based on the subject matter described in Units 3 & 4 of the syllabus.
- The three summative internal assessments will be endorsed (i.e. the mark awarded by your teacher will be cross-checked and verified by an independent marker) and the results confirmed by the QCAA.
- As shown in Figure 1, the three internal assessments will contribute **75% to your overall mark**.

Study tip

This revision and exam guide is only designed to help you prepare for the summative external assessment, so if you need any further information about any of the summative internal assessments in QCE Physical Education Units 3 & 4, ask your teacher or refer to the syllabus.





P.E. IS THE ONLY SUBJECT GUARANTEED TO MAKE YOUR HEART RACE, SO LET'S GET INTO THIS REVISION. I WANNA SEE YOU RAISE THE RUFF!



CHAPTER

2

REVISION

In this chapter, we provide a clear, concise summary of all examinable content from QCE Physical Education Unit 4 to help you revise and prepare for the external assessment. Everything has been organised by unit, topic and sub-topic in the General Senior Syllabus to help you focus your time and attention where it is needed most.

The revision notes are not designed to replace your teacher or your textbook. Instead, they have been designed to help you gauge your level of understanding and confidence of the subject matter before the exam. You can use them to identify those topics you know inside out and those that still require some extra attention.

The revision notes are also supported by a bunch of handy features, tips and icons designed to help you get the very best result on the day!

WE'RE ON THE SEARCH FOR
YOUR SECOND KNOWLEDGE
CRYSTAL. DON'T DOUBT
YOURSELF, OF **QUARTZ**
YOU CAN DO IT!



UNIT 4 TOPIC 1 – ENERGY, FITNESS AND TRAINING INTEGRATED WITH ONE SELECTED ‘INVASION’, ‘NET AND COURT’ OR ‘PERFORMANCE’ PHYSICAL ACTIVITY

2.1

ENERGY REQUIREMENTS FOR PHYSICAL ACTIVITY AND ENERGY SYSTEMS



More detail

on pages 169–185 of
Physical Education for
Queensland
Units 3 & 4



Questions

on pages 94–104

SUBJECT MATTER

Before the external assessment, you should be able to:

- recognise and explain that energy for physical activity is provided by adenosine triphosphate (ATP)
- recognise and explain that energy requirements for physical activity:
 - involve an on-going process of ATP resynthesis using various fuel sources
 - are provided by the interplay of three different pathways, known as energy systems
 - are dependent on the intensity and duration of exercise.
- recognise and explain which energy systems are used in physical activity:
 - ATP-PC
 - lactic acid
 - aerobic
- identify and explore the energy requirements for specialised movement sequences of the selected physical activity by considering:
 - how ATP is resynthesised and transferred during performance
 - the contribution ratios and interplay of the different energy systems during performance.

Modified from *Physical Education General Senior Syllabus 2019 v1.1*
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THE ROLE OF ATP IN PHYSICAL ACTIVITY

KEY CONCEPTS

- The human body requires a constant source of energy to function. This energy fuels many different systems that keep the body moving and working.
- Energy for our muscles comes from a chemical compound called adenosine triphosphate (ATP).



adenosine triphosphate (ATP) an energy-rich molecule found in the cells of every living organism that provides the energy required for most bodily functions (especially the muscle contractions that enable physical activity)

Adenosine triphosphate (ATP) is a complex molecule found in the cells of every living thing. It is used in the human body to power a range of different tasks (including the muscular contractions that create movement for physical activity). As shown in Figure 1, ATP is made up of two parts:

- a compound known as adenosine
- three chained phosphate groups.

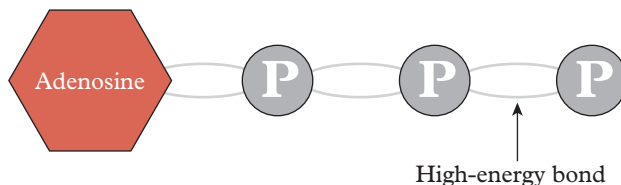


Figure 1 Adenosine triphosphate (ATP) is a complex molecule found in the cells of every living thing. It is made up of adenosine and three chained phosphate groups.

When ATP is required by cells to complete different tasks (e.g. when a muscle cell needs to contract to create movement), the high-energy bonds joining the second and third phosphate groups are broken (as shown in Figure 2). This releases energy that can be used by the cell to power muscular contraction in physical activity.

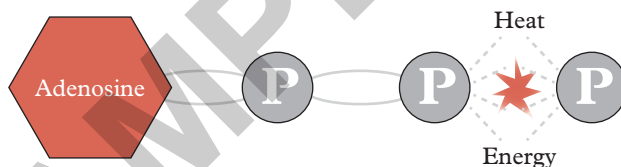


Figure 2 During an ATP reaction, the high-energy bond joining the third phosphate group is broken. This releases energy and heat. That's why your muscles heat up during exercise!

As shown in Figure 3, the result of every ATP reaction is the creation of an adenosine diphosphate (ADP) molecule (di means 'two'), as well as a separate phosphate molecule.

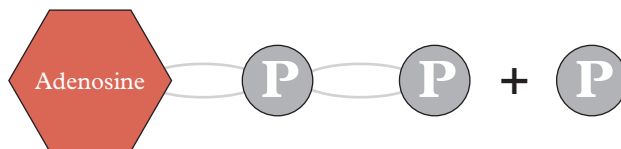



Figure 3 Once energy and heat are released, ATP becomes adenosine diphosphate (ADP) and a separate phosphate molecule.

Study tip

It can be easy to confuse adenosine triphosphate and adenosine diphosphate.

An easy way to remember the difference is to remember that **tri = three** and **di = two**. Therefore, ATP has three phosphates and ADP has two.





EXERCISE ... ???
I THOUGHT YOU SAID
EXTRA FRIES!!!
I'M STARVING!
NO MATTER! I'LL HELP YOU
DO SOME PRACTICE
QUESTIONS TO TAKE MY
MIND OFF MY GRUMBLING
TUMMY AND HELP YOU STAY
PAW-SITIVE!

SHREDDER



CHAPTER

3

PRACTICE QUESTIONS

In this chapter, we provide a range of practice questions for all of the examinable content from QCE Physical Education Unit 4. What a surprise – not! Did the title give it away?

No fancy tricks here, just heaps of questions organised by topic so you can move effortlessly between revision and practice as you study each topic. We've also grouped the multiple choice, short response and extended response questions together so you can prepare for all three sections of the exam by topic and build your confidence.

COMPLETE THIS CHAPTER TO
MINE YOUR THIRD KNOWLEDGE
CRYSTAL! YOU (BIG SHINY)
ROCK!



UNIT 4 TOPIC 1 – ENERGY, FITNESS AND TRAINING INTEGRATED WITH ONE SELECTED ‘INVASION’, ‘NET AND COURT’ OR ‘PERFORMANCE’ PHYSICAL ACTIVITY

3.1

ENERGY REQUIREMENTS FOR PHYSICAL ACTIVITY AND ENERGY SYSTEMS

MULTIPLE CHOICE QUESTIONS

**Answers**

on pages 174–175

QUESTION 1

Which of the following activities would predominantly use the lactic acid system?

- (A) 200 m swim and tennis
- (B) 400 m run and shot put
- (C) 200 m swim and 400 m run
- (D) tennis and shot put

QUESTION 2

What level of intensity does the aerobic system provide energy for?

- (A) maximal
- (B) lactate threshold
- (C) low intensity
- (D) submaximal

QUESTION 3

Which of the following is used last for ATP resynthesis?

- (A) carbohydrates
- (B) fats
- (C) proteins
- (D) water

QUESTION 4

Which time period accurately represents how long the ATP–PC system can supply energy for?

- (A) 90 seconds
- (B) 60 seconds
- (C) 10 seconds
- (D) 30 seconds



QUESTION 5

Energy for physical activity is provided by

- (A) adenosine triphosphate (ATP)
- (B) phosphocreatine (PC)
- (C) lactic acid
- (D) oxygen

© State of Queensland (QCAA) Sample assessment 2020, Question 2

QUESTION 6

Which energy system uses creatine phosphate to produce adenosine triphosphate (ATP)?

- (A) lactic acid system
- (B) ATP-PC system
- (C) aerobic system
- (D) oxygen system

QUESTION 7

An athlete repeats three high-intensity sprints of 200 metres with short, active rest periods between each sprint. Which system is contributing the most during this activity?

- (A) agility
- (B) aerobic
- (C) creatine phosphate (ATP-PC)
- (D) lactic acid (anaerobic glycolysis)

© State of Queensland (QCAA) Sample assessment 2017, Question 3

QUESTION 8

Protein is used as a fuel source for ATP production

- (A) when an athlete is at rest.
- (B) when performing high-intensity, short-duration exercise.
- (C) when an athlete has performed submaximal exercise for a period in excess of 2 hours.
- (D) during moderate intensity team sports lasting up to 60 minutes.



QUESTION 9

Which of the following best describes the percentage contribution of each energy system for an athlete running continuously for three minutes?

- (A) 10% creatine phosphate (ATP-PC), 30% lactic acid (anaerobic glycolysis), 60% aerobic
- (B) 30% creatine phosphate (ATP-PC), 60% lactic acid (anaerobic glycolysis), 10% aerobic
- (C) 60% creatine phosphate (ATP-PC), 30% lactic acid (anaerobic glycolysis), 10% aerobic
- (D) 60% creatine phosphate (ATP-PC), 10% lactic acid (anaerobic glycolysis), 30% aerobic

© State of Queensland (QCAA) Sample assessment 2017, Question 9

QUESTION 10

An athlete has devised the following interval training session.

Warm-up	800 m run (60% intensity) followed by flexibility exercises
Conditioning phase	<ul style="list-style-type: none"> • Set 1 <ul style="list-style-type: none"> - 5 × 400 m run (80% intensity) - 2 minutes of rest between repetitions • Set 2 (repeat × 2) <ul style="list-style-type: none"> - 3 minutes of skipping (jump-rope) - 3 minutes of squats - 3 minutes of step-ups - 1 minute of rest between exercises • Set 3 <ul style="list-style-type: none"> - 4 × 100 m run (maximum intensity) - 1 minute of rest between each repetition
Cool down	5-minute run (60% intensity) followed by flexibility exercises

Analyse the information above to identify the target energy system/s.

- (A) ATP-PC system
- (B) aerobic system and the ATP-PC system
- (C) aerobic system and the lactic acid system
- (D) ATP-PC system and the lactic acid system

© State of Queensland (QCAA) Sample assessment 2020, Question 8



QUESTION 11

When targeting the lactic acid system, which would be the most effective work to rest ratio?

- (A) 1:20
- (B) 1:1
- (C) 1:12
- (D) 1:3

QUESTION 12

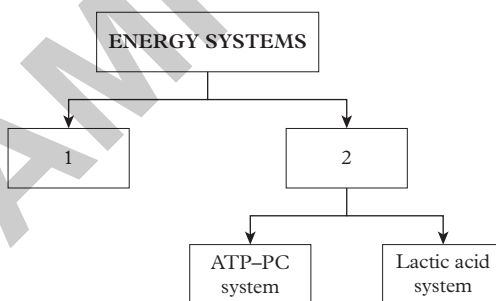
Which of the following describes the order (from first to last) in which food sources are processed by the body to produce adenosine triphosphate (ATP)?

- (A) carbohydrates, proteins, fats
- (B) carbohydrates, fats, proteins
- (C) fats, carbohydrates, proteins
- (D) proteins, carbohydrates, fats

© State of Queensland (QCAA) Sample assessment 2017, Question 4

QUESTION 13

Identify the two missing words to correctly complete this flowchart.



- (A) 1 anaerobic; 2 oxygen
- (B) 1 anaerobic; 2 glycolysis
- (C) 1 anaerobic; 2 aerobic
- (D) 1 aerobic; 2 anaerobic

QUESTION 14

A fast bowler in cricket takes 3 minutes to bowl six balls in an over. Her run-up is 22 metres long and it takes her about 4 seconds to run in and bowl the ball. Which energy system is she predominantly using?

- (A) aerobic system
- (B) ATP-PC system
- (C) lactic acid system
- (D) a mixture of all the energy systems



TIME TO GET INTO
A PRACTICE EXAM
NOW! GOOD LUCK, AND
REMEMBER, KIDS ... PUGS
NOT DRUGS!



CHAPTER

4

OFFICIAL PAST PAPER

In this chapter, things get serious! It's now time for you to put your revision and practice to the test – literally – by completing the official QCE Physical Education External assessment from 2020!

We recommend you:

- don't look at this chapter until you've finished your revision and completed all of the practice questions in Chapter 3
- complete this paper under exam conditions (i.e. follow the instructions regarding perusal time and working time, don't refer to any notes or other materials that will not be allowed during the real exam)
- refer to the answers in Chapter 5 and use the marking advice to self-assess your responses once you've finished.

Remember – this is the QCE Physical Education paper from 2020, so it's arguably the best indicator of how well you're likely to perform on the day!

SHINE ON! ACE THIS EXAM
TO BAG YOUR FOURTH
KNOWLEDGE CRYSTAL!



4.1

EXTERNAL ASSESSMENT 2020: PHYSICAL EDUCATION

Time allowed

- Perusal time – 15 minutes
- Working time – 120 minutes

General instructions

- Answer all questions in this question and response book.
- Planning paper will not be marked.

Section 1 (10 marks)

- 10 multiple choice questions

Section 2 (28 marks)

- 2 short response questions

Section 3 (24 marks)

- 1 extended response question

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Section 1 (10 marks)

**Answers**

on pages 217–221

QUESTION 1

Which of the following components of fitness best aligns with the aerobic energy system?

- (A) muscular endurance
- (B) strength
- (C) power
- (D) speed

QUESTION 2

Which training method provides scope and flexibility for targeting a broad range of components of fitness?

- (A) circuit training
- (B) fartlek training
- (C) flexibility training
- (D) high-intensity interval training



QUESTION 3

Lactate threshold is the exercise intensity at which

- (A) lactate enables VO_2 max.
- (B) lactic acid begins to increase.
- (C) ATP is removed from the muscles.
- (D) lactate begins to accumulate in the blood faster than it can be removed.

QUESTION 4

A mesocycle is

- (A) shorter than a microcycle.
- (B) generally one week of training.
- (C) made up of a number of microcycles.
- (D) an organised description of activities in a time frame.

QUESTION 5

Adenosine diphosphate

- (A) produces creatine phosphate.
- (B) is the molecule that provides energy.
- (C) is produced by the breakdown of ATP.
- (D) is specific to anaerobic energy systems.

QUESTION 6

The training principle of individuality considers an individual's

- (A) fitness levels, goals and age.
- (B) motivation, skill and gender.
- (C) personal needs, motivation and gender.
- (D) goals, personal needs and fitness levels.

QUESTION 7

During an invasion game, a player tracks their total distance travelled as 6.2 km. A game performance assessment instrument on the same match demonstrates that the player completed a total of 32 high-intensity sprints over distances ranging from 5 m to 20 m. The remainder of their performance mostly consisted of low-to-moderate-intensity running and walking.

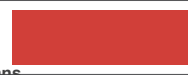
Which training method would most contribute to optimising the player's energy system requirements?

- (A) circuit training
- (B) fartlek training
- (C) continuous training
- (D) high-intensity interval training





I TOLD YOU I HAD ALL THE ANSWERS, BUT YOU TOLD ME I WAS BARKING MAD! DON'T WORRY ... I STILL PUG YOU!



CHAPTER

5

ANSWERS

OMG, another cliff-hanger – what on Earth could be in this chapter, I wonder? You guessed it; in this chapter we provide the answers to absolutely everything! Sounds simple, I know, but to get the most out of this chapter, don't just cast an eye over the answers provided and move on.

If you really want to increase your chances of excelling on the exam, we recommend you look carefully over each of your answers in Chapters 3 and 4 and compare them with the answers in this chapter. Use the 'My mark' box under each short response question to self-assess your own answers. This will help you get into the habit of structuring your responses in order to receive maximum marks, and show you what the exam marker will be looking for.

Notice to students

The answers and marking advice in this chapter are provided for practice purposes only. Unless specifically credited, the QCAA has not written this material and does not endorse the content.

A KNOWLEDGE CRYSTAL IS
JUST A PIECE OF COAL THAT
HANDLED PRESSURE REALLY
WELL! COMPLETE THIS CHAPTER
TO MINE YOUR FINAL ONE!
YOU'VE GOT THIS!



UNIT 4 TOPIC 1 – ENERGY, FITNESS AND TRAINING INTEGRATED WITH ONE SELECTED ‘INVASION’, ‘NET AND COURT’ OR ‘PERFORMANCE’ PHYSICAL ACTIVITY

5.1

ENERGY REQUIREMENTS FOR PHYSICAL ACTIVITY AND ENERGY SYSTEMS

MULTIPLE CHOICE ANSWERS

Question	Correct answer	Explanation
QUESTION 1	C	C is correct because at least one activity in the other answers is not predominantly a lactic acid energy system activity.
QUESTION 2	D	D is correct because the aerobic energy system provides energy for submaximal activities.
QUESTION 3	C	C is correct because proteins are used last, after carbohydrates and fats.
QUESTION 4	C	C is correct because the ATP-PC system can supply energy for approximately 10 seconds.
QUESTION 5	A	A is correct because ATP supplies the body with energy.
QUESTION 6	B	B is correct because creatine phosphate is used by the ATP-PC system to produce ATP.
QUESTION 7	D	D is correct because the time it takes to run 200 metres (duration) and the short rest period mean that this would be a lactic acid energy system activity.
QUESTION 8	C	C is correct because protein will only be used to produce ATP when all other fuel sources have been exhausted.
QUESTION 9	A	A is correct because 3 minutes of running would use all three energy systems, with the aerobic contributing the most, followed by lactic acid and ATP-PC.
QUESTION 10	C	C is correct because the distances and rest intervals outlined in the session clearly indicate that there is an aerobic and lactic acid system focus.
QUESTION 11	D	D is correct because the lactic acid system is most effectively targeted with work to rest ratios of 1:3 to 1:5.
QUESTION 12	B	B is correct because carbohydrates are used first, then fats and finally proteins.
QUESTION 13	D	D is correct because energy systems are classed as either aerobic or anaerobic. There is only one aerobic energy system, but there are two types of anaerobic systems – the ATP-PC system and the lactic acid system.
QUESTION 14	B	B is correct because, given the distance she runs and the time it takes to bowl a ball, against the total time it takes to bowl an over, she is predominantly using the ATP-PC system.



Question	Correct answer	Explanation
QUESTION 15	A	A is correct because the majority of the time the heart rate is below 140 beats per minute, which for this individual would be less than 70% of max heart rate and therefore aerobic in nature.
QUESTION 16	D	D is correct because the described intensity and work to rest ratios are ideal for targeting the lactic acid system.
QUESTION 17	A	A is correct because the duration and distances in the session clearly indicate high-intensity, short-period work with large rest periods.
QUESTION 18	C	C is correct because the duration and intensity indicate that the ATP-PC system would be the system used.
QUESTION 19	B	B is correct because the aerobic system is slowest in producing ATP.
QUESTION 20	A	A is correct because, for activities under 10 seconds, the ATP-PC system will supply the energy.

- 1 mark for each correct multiple choice answer

SHORT RESPONSE ANSWERS

QUESTION 21 (4 marks)

All three energy systems are used throughout the 2-minute game, however the predominant system used by each player will vary. Player 1 uses fewer movements, but each movement continues for longer and shorter duration. For the shorter bursts of energy that use above 90% intensity, Player 1 predominantly uses ATP-PC. This is because the movements are of a high intensity and below 10 seconds in duration. For the lower intensity movements used by Player 1, the aerobic system is the predominant system. However, Player 1 still uses the lactic acid system more than Player 2. Any movement below 75% intensity is predominantly aerobic because it is considered 'recovery' time and your body is repaying the oxygen debt. Player 2 continues high-intensity movements for longer than Player 1, most of which continue over 10 seconds. This means that the predominant energy system used throughout Player 2's performance is lactic acid. Less time is spent in recovery, therefore minimal use of the aerobic system occurs.

© State of Queensland (QCAA); Answer for Sample assessment 2017, Question 12 taken from Examiner's report

- 2 marks for comparison of the movements of Player 1 and Player 2
- 2 marks for identifying the contrast between Player 1 and Player 2's energy system contributions

QUESTION 22 (9 marks)

A basketball player will use all three energy systems during a match. The ATP-PC system, used to supply energy for periods up to approximately 10 seconds, will be used for many actions during the game. However, in instances where repeated efforts are required by the player in a short period of time, the ATP-PC system will not supply sufficient levels of ATP for energy production. Due to the fast-paced and fairly continuous nature of basketball, the ATP-PC system would not be able to meet all the energy requirements of a basketball player.

The lactic acid system will be the predominant energy system used by the player. The repeated, short and high-intensity efforts seen in basketball mean that players are often required to produce multiple efforts in rapid succession. The more of these periods the player experiences, the longer it will take for them to recover each time, until they reach their lactate threshold and will be forced to lower their intensity level. Therefore, the major limitation of the lactic acid system for a basketball player is the duration of recovery time allowed between periods of effort.

