

## WJEC L1/2 Vocational Award Sports and Coaching

### Practice Question Answers

**PLEASE NOTE: This document contains suggested model answers that would achieve a good mark if provided by a student in an exam. They are designed to help guide and instruct you but should not be considered definitive.**

### Unit 1: Fitness for sport

p.19

1. Describe how the cardio-vascular and respiratory systems work together to deliver oxygenated blood to the working muscles. (4 marks)

The heart receives deoxygenated blood from the body and pumps it to the lungs to be oxygenated. During inspiration, oxygen is diffused at the alveoli in the lungs and transferred to the blood. Oxygenated blood is returned to the heart from the lungs and then pumped to the rest of the body. When blood travels through the alveoli in the lungs, carbon dioxide is also eliminated from the blood.

2. Outline three examples of short-term adaptations of the cardio-respiratory system and describe their impact on the body. (6 marks)

Any from: Changes in cardiac output, heart rate, stroke volumes and temperature. Making links to increasing blood flow to the working muscles, faster removal of waste products, increasing temperature of the working muscles, increased delivery of oxygen, glucose and other nutrients to the muscles.

3. Outline three examples of long-term adaptations of the cardiorespiratory system and describe their impact on the body. (6 marks)

Any from: cardio-vascular system changes to cardiac values, capillarisation, blood pressure, cardiac hypertrophy.

Candidates should outline cardiac hypertrophy and the subsequent impact on stroke volume and cardiac output. Bradycardia (reduction in resting heart rate) could also be outlined as a direct result of cardiac hypertrophy. Capillarisation around alveoli and muscles enables more efficient delivery of oxygen and nutrients and the removal of waste products. Blood pressure at rest reduces, due to the heart being able to pump more blood with less effort, there is a reduction in LDL when we are fit and healthy, and exercise helps keep blood vessels more elastic.

**p.26**

1. Describe the main functions of the respiratory system. (4 marks)

The main functions of the respiratory system are:

Inspiration – breathing in ambient air containing oxygen

Expiration – breathing out carbon dioxide and water (vapour)

Diffusion and gaseous exchange at the alveoli with oxygen transferring into the blood and carbon dioxide being removed (breathed out)

Two of the above with description would gain the marks.

2. Outline the process of gaseous exchange. (4 marks)

Key points from:

- We breathe in air containing oxygen
- This travels to the alveoli in our lungs
- There is now a high pressure of oxygen in our alveoli
- This pressure causes the oxygen molecules to pass through the alveoli into the blood
- Conversely, in the blood, there is a high pressure of carbon dioxide
- Carbon dioxide is forced through the alveoli into lungs and breathed out.

3. Describe two short-term adaptations that occur in the respiratory system and what impact they will have on exercise. (4 marks)

Any from: changes in breathing frequency/rate, tidal volume and minute ventilation. Breathing rate increases. These change to reflect the increased demand for oxygen and the removal of carbon dioxide.

4. Describe two long-term adaptations that occur in the respiratory system and the impacts they will have on the body. (4 marks)

Any from: system changes to respiratory values and capillarisation, hypertrophy of muscles.

Respiratory muscles become stronger and more efficient so the process of breathing is easier during exercise. Capillarisation around the alveoli makes gaseous exchange more efficient.

More air can be breathed for longer periods of time without fatigue. The increase in tidal volume means that more air can be breathed in per breath.

**p.39**

1. Identify in the image below (shoulder press exercise) what movements are occurring at the elbows and shoulders and what muscles are being used. (4 marks)

Abduction – Deltoids (agonists)

Extension of the arm – Triceps (synergists)

2. Select the muscle function that helps another muscle in a movement. (1 mark)

- a) Agonist
- b) Synergist
- c) Antagonist
- d) Fixator

3. Identify the antagonistic muscles for the following agonists: (1 mark each)

- a) Hamstrings – Quadriceps
- b) Biceps – Triceps
- c) Gluteus maximus – Hip flexors

4. Describe three functions of the skeletal system. (6 marks)

- 1. Muscle attachment – Muscles attach to bones and when the muscles contract, the bones and joints move.
- 2. Protection – Various bony structures protect our organs e.g. the skull protects the brain, ribs protect the heart and the spine/vertebrae protects the spinal cord.
- 3. Structure and shape of the body – Your skeleton will dictate how tall you are and provide the shape of your body, for example the shape of your head.

**p.45**

1. Identify two waste products from exercising using the aerobic energy system. (2 marks)

Any from:

Carbon dioxide

Water

Heat

2. Identify one waste product produced when exercising anaerobically. (1 mark)

Lactic acid

3. Tennis is a sport which requires all three energy systems to be used. Explain how each energy system is used during a match. (6 marks)

A tennis match can last between 1 and 3 hours (or even longer). A tennis player must be able to work aerobically for these extended periods of time. A tennis player may use the lactic acid energy system when making repeated sprints and shots during an extended rally. They may begin to feel a burning sensation in their calf muscles. A tennis player will use the anaerobic ATP-PC energy system when hitting powerful serves, smashes and other shots. They may also use the ATP-PC system when undertaking short sprints.

4. Describe aerobic and anaerobic energy systems and identify which sports or activities they are likely to occur in. (6 marks)

Aerobic energy system – used for low-intensity activities, uses slow twitch fibres, used for extended periods of time (examples of activities should be included by the candidates). No harmful waste products, only water, carbon dioxide and heat.

Lactic acid energy system (anaerobic) – energy is produced without oxygen present which leads to the waste product lactic acid being produced. This causes a burning sensation and pain in athletes. Uses fast twitch fibres and generally lasts for up to 90 seconds until athletes need to reduce the intensity to allow recovery. Examples of activities should be provided.

ATP-PC – this energy system lasts for up to 10 seconds of high-intensity work. Uses creatine phosphate as a source of energy. Examples of activities should be provided.

### p.53

1. What two components of fitness can be identified in the image below? (2 marks)

Balance and flexibility

2. Identify the fitness tests that could be used to measure the components you have identified.

Flexibility – Sit and reach test

Balance – Standing stalk test

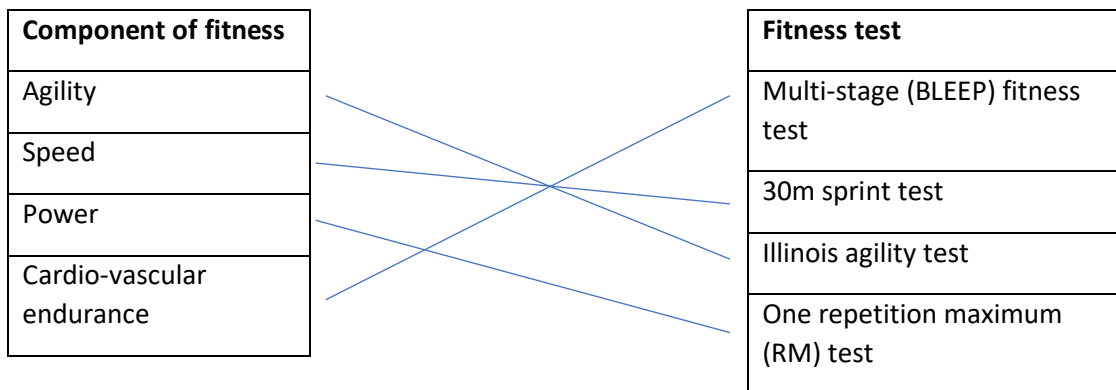
3. Provide a definition of the following components of fitness:

a) agility – the ability to change direction at speed.

- b) strength – the amount of force muscles can exert on a resistance.
- c) cardio-vascular endurance – The ability to continually exercise without fatigue.
- d) muscular endurance – The ability of the muscles to contract over an extended period of time.

**p.63**

1. Match the correct fitness test to the component of fitness.



2. As a coach for a tennis club, you want to measure your team’s current fitness levels. Considering the key components of fitness for tennis, select three fitness tests that you would do and justify their selection.

Candidates should identify what they consider the most important components of fitness. Tennis has a wide range of components of fitness so ensure that the selection of the test is valid and relevant. The justification should link to tennis skills and fitness requirements.

E.g. Illinois agility test. I have selected this as a tennis player must be able to change direction at speed throughout the game, they may have to sprint to the next, then recover their position, take a shot then sprint in another direction.

3. Describe what reliability means in fitness testing and provide some examples that can be carried out to ensure fitness testing remains reliable.

Reliability – if the testing was repeated would you get similar results? To maintain reliability, testing should be undertaken under the same conditions including time of day, similar weather conditions if outside, nutritional status should be the same, use the same equipment, use the same facilities and footwear should be the same.

4. Why should individuals regularly repeat fitness tests when they are engaged in a training programme?

Undertaking fitness tests during the season enable coaches and players to observe any improvements or reduction in fitness levels. The initial fitness testing provides a baseline as to where an athlete's fitness level are at. Fitness testing provides data to be able to focus training and where improvements may need to be made.

**p.65**

1. Explain what normative data is and why it is important. (4 marks)

Normative data provides a baseline set of results that can be referred to when undertaking fitness tests. They provide data which is standardised to identify the result of fitness tests for different age groups between males and females.

They are important as they provide a standardised data set that can be used nationally and internationally. This data can be used to compare similar population groups.

2. It is pre-season, and you have to explain to players why they need to undertake fitness testing. Outline three reasons why pre-season fitness testing is important. (3 marks)

Any three from:

- Carry out comparisons against normative data
- Identify a performer's strengths and weaknesses
- Provide a baseline for future comparisons
- Provide important information for the coach
- Provide information that assists in team selection
- Set goals or targets

4. What benefits would a coach get from regular fitness testing? (4 marks)

- Can assess if a fitness programme or coaching session is working.
- Can assist in team selection.
- Can help change tactics – so identifying faster players or stronger players.
- Can help set goals for the season and the coach can see if they have achieved the goals.

**p.75**

1. Describe the elements of a warm-up, providing examples for each stage, linked to a specific sport. (8 marks)

As identified in the book. All warm-up exercises/activities should have some relevance to the selected sport.

2. Describe the physical and mental benefits of a warm-up. (4 marks)

Any from:

Improved concentration; reduced anxiety; increased motivation; improves confidence; pumps more oxygenated blood to working muscles; increases body temperature; increases heart rate and breathing rate; increased flexibility and pliability of muscles; reduces the chance of injury.

3. Outline why the health and age of the athlete are important considerations when planning training. (2 marks)

Health – ensure they have their required medication with them, ensure they are not a risk of injury, or their health being negatively impacted, e.g. if someone has asthma, allow them to stop to take their inhaler, don't work them at such high intensities.

Age – older participants will need a longer warm-up, and younger participants may need more regular breaks. Older people may be less flexible than younger people so this should be taken into account during training. Do not put adults with children in sessions as this will increase the risk of injury to the child.

#### **p.78**

1. Define 'specificity' and provide a practical sporting example. (2 marks)

This is training-specific components of fitness for the sport someone is doing. In rugby, developing strength, power and speed will be important. Specificity in training can also be practicing sports-specific skills, techniques and tactics during training.

#### **p.81**

1. If a high jumper wants to develop their ability to jump higher and run faster, what methods of training would you suggest for them to successfully do this? (2 marks)

There may be a variety of answers to this question. This response could include resistance training exercises, shuttle runs, plyometric training, parachute sprints, uphill and downhill sprinting and they may also mention specific fitness tests.

2. 'Matching training to requirements of the sport and individual – focusing on the skills, major muscle groups, duration and intensity similar to the activity and needs of the individual' is the definition of which principle of training?

- a) Variance
- b) Moderation
- c) Overload

d) Specificity (1 mark)

3. Provide a definition of 'interval training' and describe how it can be used in training. (2 marks)

A period of higher intensity training followed by an active rest. The intensity, work:rest time is selected by the coach.

**p.84**

Paul is an amateur tennis player. He is lacking motivation as he regularly gets beaten. He trains once a week and lives within walking distance of the tennis club which has a gym.

Some of Paul's fitness test results are below:

- 30 m sprint test – poor
- Multi-stage (BLEEP) fitness test – average
- Agility – poor
- Power – good

1. Write one SMART long-term and one SMART short-term goal for Paul. (2 marks)

ST – In three weeks, improve my agility test result to average.

LT – In six months, improve all fitness test results. Poor results to good, average results to very good and good results to very good.

2. Describe two benefits of setting SMART goals for Paul. (2 marks)

- Smart goals will help provide motivation to athletes.
- Smart goals can help track progress for the athletes.
- Smart goals help develop confidence for athletes as they progress through their short-term goals.
- Helps identify missed targets.

3. Paul wants to go to the gym to lose some weight over the next month. Write Paul a SMART goal to help him achieve this. (6 marks)

- Train in the gym at least three times per week for one hour for at least four weeks.
- Reduce calorie intake to 2200 calories per day for the next four weeks.
- Drink at least two litres of water per day, increasing to two and a half litres per day over four weeks.