3.4 Training Methods and Their Suitability: 30-minute Pack

Total Marks

AQA 8582 · Calculator allowed · about 30 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Name the training method that involves holding a stretch at the furthest comfortable point of a joint's range of motion for a period of time, most effective for improving flexibility.

(Total for Question 1 is 1 mark)

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2 Evaluate which training methods would be most suitable for Marcus's training programme, and discuss the suitability of continuous training as a method for a player in his position.

(Total for Question 2 is 9 marks)

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3 Explain why weight training using a LOW percentage of 1RM with a HIGH number of repetitions would be a more suitable choice than plyometric training for a rower who is training to build muscular endurance across a 2000 m race.

(Total for Question 3 is 2 marks)

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4 A badminton player's matches involve short bursts of very fast movement around the court, separated by brief pauses between points, over a match that can last up to an hour. Explain why interval training, rather than continuous training, is likely to be the more suitable primary training method for this player's fitness demands.

(Total for Question 4 is 3 marks)

5 A netball centre needs aerobic endurance to cover the whole court for a full match, agility and speed for short sprints between phases of play, and enough flexibility to reach and intercept passes safely. She currently only trains using continuous running. Evaluate which ONE training method would be the most useful single addition to her existing programme.

(Total for Question 5 is 6 marks)

6 State one reason why circuit training might be a MORE suitable choice than continuous training for a team-sport pre-season programme that needs to develop several different components of fitness at once.

(Total for Question 6 is 2 marks)

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7 Compare interval training with continuous training as methods of improving aerobic endurance.

(a) State one advantage of interval training compared with continuous training. **(1)**

(b) State one disadvantage of interval training compared with continuous training. **(1)**

(Total for Question 7 is 2 marks)

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8 A gymnast needs a very large range of motion at her hip and shoulder joints for her floor routine. Explain why passive static stretching, performed with a training partner, could develop greater flexibility gains than active static stretching alone, and state one risk of this approach.

(Total for Question 8 is 3 marks)

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9 Explain why interval training using SHORT, near-maximal effort work periods with LONG recovery periods is more likely to improve an athlete's speed than their aerobic endurance.

(Total for Question 9 is 2 marks)

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10 Explain why interval training using LONGER work periods at a lower (but still testing) intensity, with SHORTER recovery periods, is more likely to improve aerobic endurance than pure speed.

(Total for Question 10 is 2 marks)

11 Explain why plyometric training is effective for improving an athlete's power, referring to how the exercises work the muscles.

(Total for Question 11 is 3 marks)

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Mark scheme · 3.4 Training Methods and Their Suitability: 30-minute Pack

Question 1

static stretching (flexibility training) **B1**

Answer: Static stretching (flexibility training).

Question 2

Level 3 A detailed and coherent response that identifies training methods suited to Marcus's specific demands (strength, power, muscular endurance), applies the discussion to his position (scrummaging, tackling, an 80-minute match), and reaches a balanced, well-reasoned judgement on the suitability of continuous training. Sustained, accurate use of terminology throughout. **7-9**

Level 2 Some accurate identification of suitable training methods and some discussion of continuous training's suitability, with partial application to Marcus's specific role, but coverage may be incomplete or the evaluation may be one-sided. **4-6**

Level 1 Basic or generic statements about training methods with little or no application to Marcus's specific role, and little or no discussion of continuous training's suitability. **1-3**

Level 0 No relevant content. **0**

Indicative content:

- Weight (resistance) training using a high load and low repetitions would develop the maximal strength Marcus needs for scrummaging, where he must produce very large forces against the opposition front row.
- Plyometric training would develop the explosive power Marcus needs for tackling and driving forward, since these actions require rapid, forceful muscle contractions similar to the stretch-shortening cycle plyometrics trains.
- Circuit training, or weight training using a moderate load with higher repetitions, could help develop the muscular endurance Marcus needs to keep producing high force output repeatedly across an 80-minute match, rather than only in a single effort.
- Continuous training is relatively unsuitable as Marcus's PRIMARY method, since it mainly develops aerobic endurance rather than the maximal strength and explosive power that most directly determine his performance in scrums, tackles and drives.
- However, some low-intensity continuous or aerobic work may still have a minor role, supporting general match fitness, recovery between efforts, and overall conditioning across a long match, so a balanced answer should not dismiss it completely.
- A well-reasoned evaluation should conclude that Marcus's programme should be dominated by strength, power and muscular-endurance-focused methods, matched specifically to his role, with continuous training used only in a minor, supporting capacity rather than as a main method.

Question 3

low-load, high-repetition weight training specifically overloads the muscle's ability to keep contracting repeatedly against a manageable resistance, which is what develops muscular endurance, oe **B1**

plyometric training targets explosive power through a small number of maximal-effort contractions and does not overload the muscle's ability to repeat sub-maximal contractions in the way muscular endurance training requires, oe **B1**

Answer: Low-load, high-repetition weight training overloads the muscle's ability to keep contracting repeatedly, which is what builds muscular endurance, whereas plyometric training uses a small number of maximal-effort contractions aimed at power, not repeated sub-maximal effort.

Question 4

the player's movement pattern is stop-start, made up of short, high-intensity bursts rather than one long continuous effort, oe **B1**

interval training can replicate this by alternating short, high-intensity work periods with recovery periods, which matches the game's actual demands more closely than one sustained steady pace, oe **B1**

continuous training would develop general aerobic endurance but would not specifically prepare the player for repeatedly producing short, fast bursts of movement, oe **B1**

Answer: Badminton involves stop-start, short high-intensity bursts rather than one long steady effort, so interval training (alternating short high-intensity work with recovery) matches the game's demands more closely than continuous training, which would only develop general aerobic endurance.

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Question 5

Level 3 A detailed and coherent evaluation that clearly justifies a chosen training method (e.g. interval or circuit training) against at least two of the centre's stated needs, and reaches a well-justified judgement about which single addition is most useful. Sustained, accurate use of training-method terminology. **5-6**

Level 2 Some accurate reasoning linking a training method to at least one of the centre's stated needs, with a judgement present but underdeveloped or only partly justified. **3-4**

Level 1 A basic or generic statement of a training method with little or no application to the netball centre's specific needs. **1-2**

Level 0 No relevant content. **0**

Indicative content:

- Interval training would add repeated high-intensity bursts with recovery, closely matching the stop-start sprinting demands of netball, which continuous running alone does not develop.
- Circuit training could instead be argued for, since it could include agility-based stations and a flexibility station within the same session, addressing more than one of her needs at once.
- A judgement might favour interval training because speed and agility are described as a specific gap that continuous running does not touch, while flexibility could still be maintained through a short separate stretching routine rather than requiring a whole session.
- Alternatively, a judgement might favour circuit training on the basis that it is the most time-efficient way to address several needs (an endurance element can be kept, plus agility and flexibility stations) within one session, given that a school-level programme normally has limited training time.
- A weaker answer might simply name 'circuit training' or 'interval training' with no development of why, or repeat facts about the methods with no application to the netball centre's specific role.

Question 6

circuit training can include a variety of different stations, each targeting a different component of fitness, oe **B1**

whereas continuous training mainly targets one component (aerobic endurance) throughout the whole session, oe **B1**

Answer: Circuit training can include a variety of different stations, each targeting a different component of fitness within the same session, whereas continuous training mainly targets one component, aerobic endurance, throughout the whole session.

Question 7

(a) the work:rest ratio can be precisely adjusted to target a specific intensity/energy system, giving the coach more control than a single steady continuous pace, oe **B1**

(a) Answer: The work:rest ratio can be precisely adjusted to target a specific intensity or energy system, giving the coach more control than a single steady continuous pace.

(b) it is more complex to plan, time and monitor correctly (getting the work:rest ratio and intensity right) than a simple continuous run, oe **B1**

(b) Answer: It is more complex to plan, time and monitor correctly than a simple continuous run.

Question 8

a partner (or apparatus) can apply extra force to move the joint slightly further into the stretch than the gymnast's own opposing muscles could achieve unaided, oe **B1**

this can take the joint closer to, or beyond, its usual active range of motion, which can develop a greater increase in flexibility over time than stretching alone, oe **B1**

risk: because a partner cannot feel exactly how far the gymnast's joint can safely go, there is a greater risk of overstretching or injury if the stretch is not controlled carefully, oe **B1**

Answer: A partner can apply extra force to move the joint further into the stretch than the gymnast's own muscles could unaided, which can develop greater flexibility over time, but there is a greater risk of overstretching or injury because the partner cannot feel exactly how far the joint can safely go.

Question 9

the short, near-maximal work periods overload the muscles' ability to produce force very quickly (the anaerobic/speed systems), not the ability to sustain aerobic effort, oe **B1**

the long recovery periods allow the athlete to be near fully recovered before each effort, so each rep can be performed at close to maximum speed rather than at a sustainable aerobic pace, oe **B1**

Answer: The short, near-maximal work periods overload the muscles' ability to produce force very quickly, targeting speed rather than sustained aerobic effort, and the long recovery periods let the athlete be near fully recovered before each rep, so every rep can be performed at close to maximum speed rather than at a sustainable aerobic pace.

Question 10

the longer work periods force the aerobic energy system to keep supplying oxygen to the muscles over a sustained duration, oe **B1**

the shorter recovery periods mean the athlete does not fully recover between efforts, continuing to stress the cardiovascular system across the whole session, similar to a sustained aerobic effort, oe **B1**

Answer: The longer work periods force the aerobic energy system to keep supplying oxygen to the muscles over a sustained duration, and the shorter recovery periods mean the athlete does not fully recover between efforts, keeping the cardiovascular system under continued stress across the whole session, similar to a sustained aerobic effort.

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Question 11

plyometric exercises involve a rapid stretch (lengthening) of a muscle immediately followed by a rapid, powerful contraction, known as the stretch-shortening cycle, oe **B1**

this trains the muscle and nervous system to produce a large force in a very short amount of time, oe **B1**

which directly matches the definition of power (strength applied quickly), so repeated exposure to this stretch-shortening action improves how much force the muscle can generate explosively, oe **B1**

Answer: Plyometric exercises involve a rapid stretch of a muscle immediately followed by a rapid, powerful contraction (the stretch-shortening cycle), which trains the muscle and nervous system to produce a large force in a very short amount of time. This directly matches the definition of power as strength applied quickly, so repeated plyometric training improves how explosively the muscle can generate force.

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