PE.HW7 Somatotypes and Matching Body Type to Sporting Activity

Total Marks

AQA 8582 · Calculators not allowed · about 35 minutes

Name: _____ Date: ____ / ____ / _____

Answer the shorter questions in single words or short phrases unless the command requests full sentences. Spend about 35 minutes on the whole pack. The final question requires full sentence answers.

1 Tick one box, choosing the correct description of an ectomorph body type in the context of athlete body shapes.

- ☐ A) Short, broad, high body fat
- ☐ B) Tall, narrow, low body fat
- ☐ C) Muscular, broad shoulders, low body fat
- ☐ D) Rounded, high body fat, slow metabolism

(Total for Question 1 is 1 mark)

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2 Read the performer description: 'Short, strongly muscled, wide shoulders, explosive power'. Identify which somatotype best matches this performer.

(Total for Question 2 is 1 mark)

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3 A performer is described as 'rounded torso, higher body fat, solid lower limb mass, suited to strength-based, static events'. Name the somatotype this description indicates.

(Total for Question 3 is 1 mark)

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4 Describe two typical physical characteristics of an ectomorph body type, using sporting context where helpful.

(Total for Question 4 is 2 marks)

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5 Describe two physical characteristics of a mesomorph body type and explain briefly how each characteristic helps performance in a sprint.

(Total for Question 5 is 2 marks)

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6 Describe two characteristics of an endomorph body type and state one type of sport or event where this somatotype can be advantageous.

(Total for Question 6 is 3 marks)

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7 Tick one box: which somatotype would a typical elite marathon runner most likely have?

- ☐ A) Endomorph
- ☐ B) Mesomorph
- ☐ C) Ectomorph
- ☐ D) None of these

(Total for Question 7 is 1 mark)

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8 A gymnast is described as 'compact, very muscular, high strength to bodyweight ratio'. Identify the somatotype and give one sporting reason why this body type helps gymnasts.

(Total for Question 8 is 1 mark)

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9 Describe two reasons why an ectomorph body type can be advantageous in endurance sports such as marathon running, using sporting context.

(Total for Question 9 is 2 marks)

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10 Explain three ways a mesomorph body type helps a sprinter achieve fast acceleration and top speed. Use sporting examples in each point.

(Total for Question 10 is 3 marks)

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11 Tick one box: which somatotype is most likely to be advantageous for a shot putter?

- ☐ A) Ectomorph
- ☐ B) Mesomorph
- ☐ C) Endomorph
- ☐ D) Ecto-mesomorph blend

(Total for Question 11 is 1 mark)

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12 State two sporting positions or events where a mesomorph somatotype could be advantageous, giving one short explanation for each choice.

(Total for Question 12 is 2 marks)

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13 Describe one limitation of assuming an athlete should only train to match a single pure somatotype when preparing for a team sport position.

(Total for Question 13 is 2 marks)

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14 Evaluate why an ectomorph somatotype is often recommended for a marathon runner. Use a named sporting example and reach a supported judgement on how important somatotype is compared with training and nutrition.

Evaluate why an ectomorph somatotype is often recommended for a marathon runner. Use a named sporting example and reach a supported judgement on how important somatotype is compared with training and nutrition.

(Total for Question 14 is 6 marks)

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Mark scheme · PE.HW7 Somatotypes and Matching Body Type to Sporting Activity

Question 1

- **B1** B
- **Answer: B (Tall, narrow, low body fat)**

Question 2

- **B1** mesomorph
- **Answer: Mesomorph**

Question 3

- **B1** endomorph
- **Answer: Endomorph**

Question 4

- **B1** tall and narrow frame, long limbs, oe
- **B1** low levels of body fat and little muscle bulk, oe
- **Answer: Tall, narrow frame with long limbs; low levels of body fat and little muscle bulk.**

Question 5

- **B1** muscular, well-developed muscles especially in the legs and shoulders, oe
- **B1** broad shoulders and powerful build, allowing forceful contractions for fast starts and high power output, oe
- **Answer: Well-developed leg and shoulder muscles provide power for rapid acceleration; broad shoulders and a powerful build allow forceful contractions for fast starts and high sprint speed.**

Question 6

- **B1** rounded torso and higher levels of body fat, oe
- **B1** greater mass and solid limb girth providing stability and strength in static actions, oe
- **B1** correct sport or event named, e.g. shot put or sumo wrestling, oe
- **Answer: Rounded torso with higher levels of body fat; greater mass and solid limb girth providing stability and strength. Advantageous in sports such as shot put or sumo wrestling.**

Question 7

- **B1** C
- **Answer: C (Ectomorph)**

Question 8

- **B1** mesomorph
- **Answer: Mesomorph, because muscular strength relative to bodyweight helps perform powerful moves and control body positions in gymnastic skills.**

Question 9

- **B1** lower body mass reduces energy cost per kilometre, making long distances easier to sustain, oe
- **B1** long limbs and leanness improve heat dissipation and running economy, oe
- **Answer: Lower body mass reduces the energy cost per kilometre, helping sustain pace over long distances; long limbs and leanness improve running economy and heat dissipation.**

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Question 10

- **B1** well-developed leg muscles provide powerful concentric contractions for explosive starts and stride force, oe
- **B1** broad shoulders and strong core help transfer force effectively through the body during sprint stride, improving efficiency, oe
- **B1** lower relative fat and compact muscle arrangement means more of the sprinter's mass contributes to force production rather than dead weight, oe
- **Answer: Strong leg muscles give powerful contractions for explosive starts and high ground reaction forces; broad shoulders and a strong core transfer force efficiently through the torso into sprinting action; relatively low fat and compact musculature mean more mass is available for force production rather than dead weight, improving acceleration and top speed.**

Question 11

- **B1** C
- **Answer: C (Endomorph)**

Question 12

- **B1** example 1 with brief reason, e.g. rugby centre, muscular power for tackling and sprinting, oe
- **B1** example 2 with brief reason, e.g. 100 m sprinter, explosive leg power for acceleration, oe
- **Answer: Rugby centre, because muscular power and speed help in tackling and breaking lines; 100 m sprinter, because explosive leg power and fast recovery between strides aid rapid acceleration.**

Question 13

- **B1** team sport positions often require a blend of attributes (endurance, strength, speed) so a single somatotype focus may ignore other required capacities, oe
- **B1** focusing only on body type may neglect skill, tactical awareness and conditioning, which are critical in team sport performance, oe
- **Answer: Team sports require a mix of endurance, strength and speed, so training purely to fit one somatotype can neglect other necessary physical attributes; it may also underplay skill, tactical awareness and condition-specific training needed for the position.**

Question 14

- **Level 3** (5-6): A detailed evaluation that explains multiple reasons why ectomorph traits benefit marathon running, uses a named sporting example accurately, compares somatotype to training and nutrition and reaches a clear, justified judgement.
- **Level 2** (3-4): A developed response that explains some advantages of ectomorph traits and makes a sensible comparison with training or nutrition, with an attempt at a conclusion.
- **Level 1** (1-2): A basic answer that states one or two simple advantages of the ectomorph body type with little or no comparison to training and nutrition.
- **Indicative content:**
  - Ectomorph characteristics such as low body mass reduce the energy cost of running long distances, improving running economy.
  - Long limbs and a slender frame can aid heat dissipation and reduce mechanical load per stride, delaying fatigue over a marathon.
  - Named example, e.g. Eliud Kipchoge is relatively lean and light, illustrating how lean physique aids sustained high pace over 42.195 km.
  - Training factors: high mileage, interval and threshold work, and specific strength and conditioning are essential to develop endurance, economy and injury resilience, regardless of somatotype.
  - Nutrition factors: appropriate energy intake, carbohydrate periodisation and hydration strategies are critical for fuelling long runs and recovery, often outweighing small advantages from body shape.
  - Judgement: somatotype provides a useful natural advantage for marathon running, but training and nutrition are more decisive for elite performance because they determine physiological adaptations and race-day preparedness.

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