5.6 Health, Fitness and Wellbeing: Diet, Body Composition and Matching Nutrition to Sport: 30-minute Pack

Total Marks

AQA 8582 · Calculators not allowed · about 30 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Which somatotype category is typically associated with a narrow frame and long limbs?

- ☐ A) Ectomorph
- ☐ B) Mesomorph
- ☐ C) Endomorph
- ☐ D) None of these categories describe frame or limb length

(Total for Question 1 is 1 mark)

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2 State the three somatotype categories and give one general physical characteristic typically associated with each.

(Total for Question 2 is 3 marks)

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3 Which statement about somatotypes is correct?

- ☐ A) Most people show a blend of characteristics from more than one somatotype category
- ☐ B) Every performer fits into exactly one pure somatotype category
- ☐ C) Having a particular somatotype guarantees success in a matching sport
- ☐ D) Somatotype is calculated using the same formula as BMI

(Total for Question 3 is 1 mark)

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4 State two factors, other than the sport a person plays, that can affect what is considered an appropriate 'optimum weight' for them.

(Total for Question 4 is 2 marks)

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5 State two methods, other than BMI, that could be used to estimate a performer's body composition.

(Total for Question 5 is 2 marks)

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6 Discuss how the physical demands of two different named sports, for example rugby scrummaging and marathon running, can be associated with different typical physical builds among elite performers in each, and evaluate why it would be inaccurate to describe either sport as needing one single 'ideal' body type.

(Total for Question 6 is 9 marks)

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7 Which of these is a genuine limitation of BMI, rather than a limitation of somatotype classification?

- ☐ A) It cannot distinguish between muscle mass and fat mass
- ☐ B) It only describes broad body shape rather than a numerical health measurement
- ☐ C) It groups people into three descriptive categories
- ☐ D) It exists on a spectrum with wide individual variation

(Total for Question 7 is 1 mark)

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8 State two things a coach should consider, other than body composition alone, when assessing a performer's readiness for their sport.

(Total for Question 8 is 2 marks)

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9 Very few people are a 'pure' example of a single somatotype.

(a) State why most people are not a pure example of a single somatotype. **(2)**

(b) Explain why having a particular somatotype does not, on its own, guarantee success in a sport. **(2)**

(Total for Question 9 is 4 marks)

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10 Which term describes the weight considered appropriate for a specific individual, taking into account factors such as their height, gender, bone structure and build?

- ☐ A) Somatotype
- ☐ B) Optimum weight
- ☐ C) Body mass index (BMI)
- ☐ D) Energy balance

(Total for Question 10 is 1 mark)

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11 Explain why there is no single 'optimum weight' figure that applies to everyone.

(Total for Question 11 is 2 marks)

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12 Explain why this single reading, on its own, is not a reliable way to judge whether this performer carries excess body fat.

(Total for Question 12 is 3 marks)

13 Explain why a sports scientist would be cautious about using BMI alone to compare the health of two performers from very different sports, for example a marathon runner and a shot putter.

(Total for Question 13 is 2 marks)

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Mark scheme · 5.6 Health, Fitness and Wellbeing: Diet, Body Composition and Matching Nutrition to Sport: 30-minute Pack

Question 1

A **B1**

Answer: A

Question 2

ectomorph: typically a narrow frame with long limbs, oe **B1**

mesomorph: typically a more muscular, wedge-shaped frame, oe **B1**

endomorph: typically a rounder frame with a greater tendency to store body fat, oe **B1**

Answer: Ectomorph: typically a narrow frame with long limbs. Mesomorph: typically a more muscular, wedge-shaped frame. Endomorph: typically a rounder frame with a greater tendency to store body fat.

Question 3

A **B1**

Answer: A

Question 4

height, oe **B1**

bone structure, gender, or muscle girth (build), oe **B1**

Answer: Height, and bone structure or muscle girth, are both factors that can affect what is considered an appropriate optimum weight for a person.

Question 5

skinfold callipers, oe **B1**

hydrostatic (underwater) weighing, oe **B1**

Answer: Skinfold callipers and hydrostatic (underwater) weighing are both methods, other than BMI, used to estimate body composition.

Question 6

Level 3 A detailed and coherent response that accurately links the physical demands of both named sports to typical build tendencies, and reaches a well-justified evaluative judgement, supported by evidence of individual variation and other performance factors, that neither sport requires one single ideal body type. Sustained, accurate use of terminology throughout, with somatotypes and build discussed only as descriptive tendencies. **7-9**

Level 2 Some accurate coverage of the demands of at least one named sport and its typical build tendency, with some evaluative comment, though coverage of both sports or the 'no single ideal type' judgement may be underdeveloped or one-sided. Generally correct use of terminology. **4-6**

Level 1 Basic or generic statements about body types and sport with little or no specific application to the two named sports and little evaluation of the 'ideal body type' claim. **1-3**

Level 0 No relevant content. **0**

Indicative content:

- Rugby scrummaging demands generating and withstanding large forces at close quarters, which is often associated with a build carrying substantial overall muscle mass (broadly mesomorph-leaning tendencies).
- Marathon running demands sustaining a running action, against the body's own weight, for a very long duration, which is often associated with a lighter, leaner build (broadly ectomorph-leaning tendencies) to support a favourable power-to-weight ratio.
- These are typical tendencies observed at elite level, not requirements, since somatotype exists on a spectrum and most people show a blend of characteristics.
- Individual variation within either sport is wide: successful performers in both rugby and marathon running have been found across a range of builds.
- Skill, technique, fitness (e.g. specific components relevant to the sport) and psychological factors also strongly determine success, independently of build.
- Evaluative point: because success depends on multiple factors together, and because individual variation within each sport is wide, describing either sport as needing one single 'ideal' body type overstates what typical-tendency evidence actually shows.
- Balanced conclusion: it is more accurate to describe certain builds as commonly advantageous on average for a sport's typical demands, while recognising that no specific body type is required for an individual to succeed.

Question 7

A **B1**

Answer: A

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Question 8

their skill/technical ability, oe **B1**

their fitness levels, in the components of fitness relevant to the sport, oe **B1**

Answer: A coach should also consider a performer's skill/technical ability, and their fitness levels in the components relevant to the sport.

Question 9

(a) most people show a blend or combination of characteristics from more than one category, oe **B1**

(a) somatotype exists on a spectrum/continuum rather than as three completely separate, fixed types, oe **B1**

(a) Answer: Most people show a blend of characteristics from more than one somatotype category, since somatotype exists on a spectrum rather than as three completely separate, fixed types.

(b) sporting success depends on many other factors besides physical build, such as skill, fitness, technique and psychological factors, oe **B1**

(b) performers with a wide range of body types have succeeded in the same sport, showing there is no single required profile, oe **B1**

(b) Answer: Sporting success depends on many other factors besides physical build, such as skill, fitness, technique and psychological factors, and performers with a wide range of body types have succeeded in the same sport, showing there is no single required profile.

Question 10

B **B1**

Answer: B

Question 11

optimum weight depends on individual factors such as height, gender, bone structure and muscle girth, which vary from person to person, oe **B1**

so what is considered an appropriate weight for one individual will not necessarily be appropriate for another, oe **B1**

Answer: Optimum weight depends on individual factors such as height, gender, bone structure and muscle girth, which vary from person to person, so what is considered appropriate for one individual will not necessarily be appropriate for another.

Question 12

the BMI formula only uses height and total body mass, and cannot separate how much of that mass is muscle versus fat, oe **B1**

rugby forwards typically carry a large amount of muscle mass built through strength/resistance training, which adds to body mass without being body fat, oe **B1**

so a high BMI reading in this case is more likely to reflect high muscle mass than excess body fat, meaning BMI alone gives an incomplete picture for this performer, oe **B1**

Answer: The BMI formula only uses height and total body mass, and cannot separate muscle from fat. Rugby forwards typically carry a large amount of muscle mass built through strength training, which adds to body mass without being body fat. A high BMI reading in this case is therefore more likely to reflect high muscle mass than excess body fat, so BMI alone gives an incomplete picture for this performer.

Question 13

BMI cannot separate muscle mass from fat mass, so it does not directly measure health or fitness, oe **B1**

the two performers are likely to have very different muscle mass for reasons related to their sport's demands, which BMI alone cannot explain, oe **B1**

Answer: BMI cannot separate muscle mass from fat mass, so it does not directly measure health or fitness, and the two performers are likely to have very different muscle mass for reasons related to their sport's demands, which BMI alone cannot explain.

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