Diploma Programme
Programme du diplôme
Programa del Diploma

Sports, exercise and health science
Higher level
Paper 1

29 April 2025

Zone A afternoon | **Zone B** afternoon | **Zone C** afternoon

1 hour

Instructions to candidates

- Do not open this examination paper until instructed to do so.
- Answer all the questions.
- For each question, choose the answer you consider to be the best and indicate your choice on the answer sheet provided.
- The maximum mark for this examination paper is **[40 marks]**.

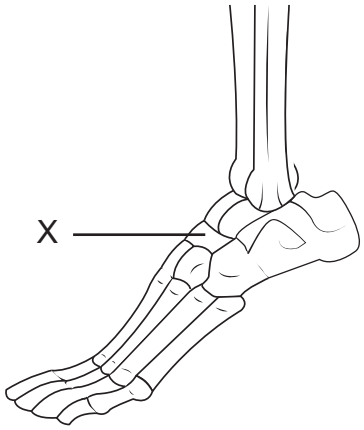
2225 – 6813

16 pages

1. Which option relates to the axial skeleton?

	Role	Body part A	Body part B
A.	Protection	Ilium	Sternum
B.	Movement	Patella	Thoracic vertebrae
C.	Attachment	Ribs	Sacrum
D.	Support	Femur	Lumbar vertebrae

2. What type of bone is X?



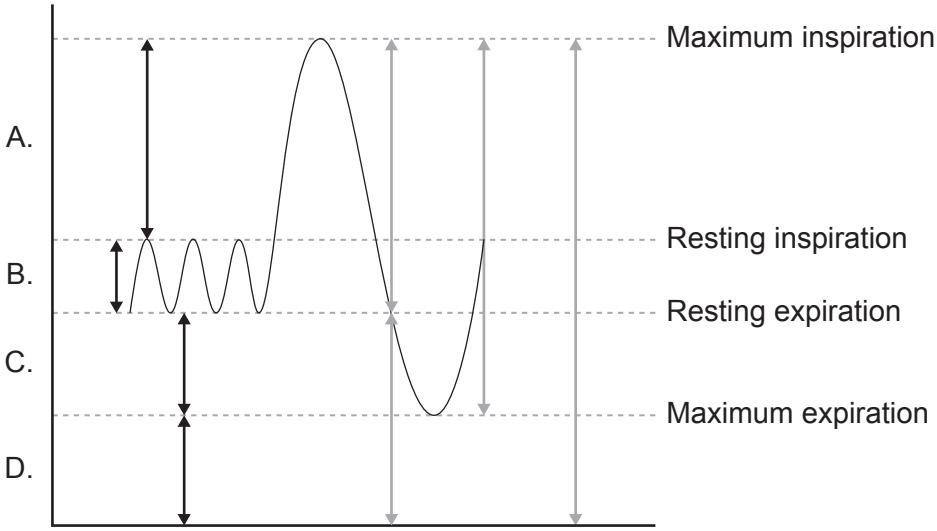
A. Long

B. Short

C. Flat

D. Irregular

3. Which labelled segment represents expiratory reserve volume (ERV)?



4. What causes maximal inspiration?

A.	Diaphragm relaxation	Accessory muscle contraction
B.	Diaphragm contraction	Accessory muscle contraction
C.	Diaphragm relaxation	Accessory muscle relaxation
D.	Diaphragm contraction	Accessory muscle relaxation

5. What is the correct route of blood in pulmonary circulation?

	Location 1	**Location 2**	**Location 3**
A.	Right atrium	Pulmonary vein	Right ventricle
B.	Right ventricle	Pulmonary artery	Right atrium
C.	Pulmonary vein	Pulmonary artery	Left atrium
D.	Pulmonary artery	Pulmonary vein	Left atrium

6. What is the function of leucocytes?

A. To fight pathogens

B. To distribute oxygen

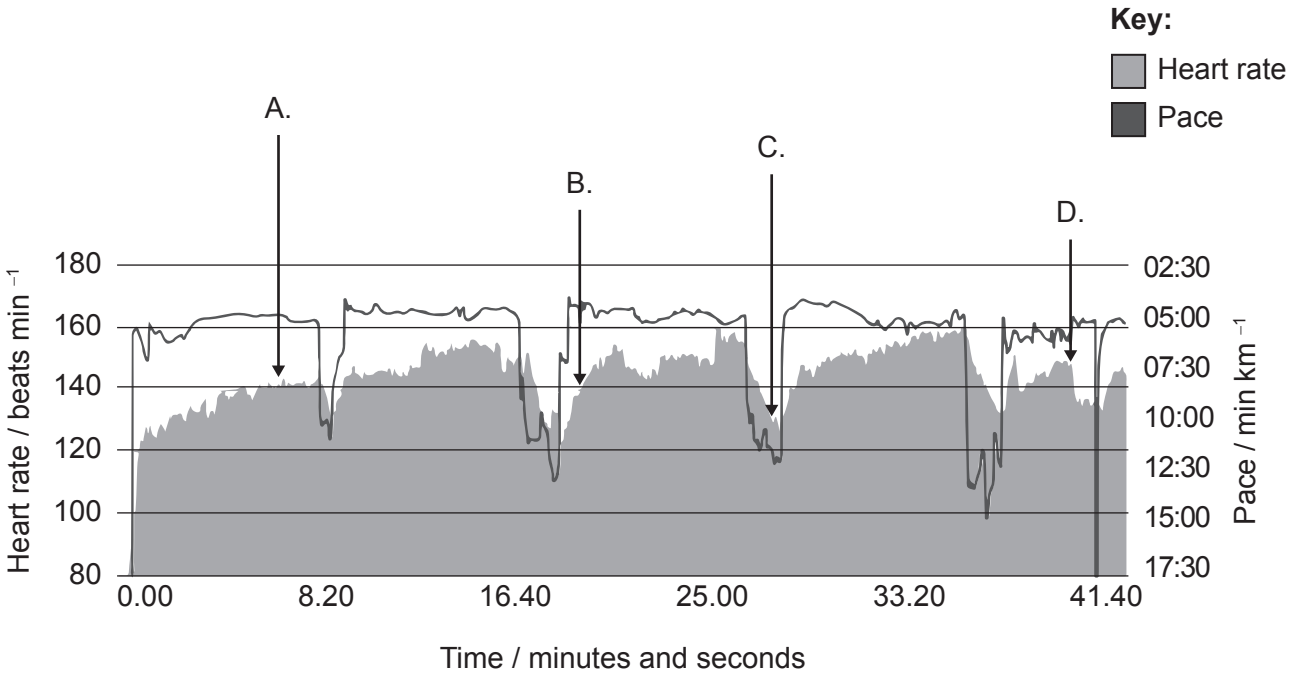
C. To carry glucose

D. To transport carbon dioxide

7. Which cardiovascular adaptation to endurance exercise training affects the maximal cardiac output of an athlete?

A.	Increased stroke volume	Maintains maximal heart rate
B.	Increased stroke volume	Decreases maximal heart rate
C.	Decreased stroke volume	Increases maximal heart rate
D.	Decreased stroke volume	Decreases maximal heart rate

8. The graph displays data obtained from a runner's smartwatch. Which label shows an example of an oxygen deficit?



9. What is the approximate energy contribution of 100 g of protein?

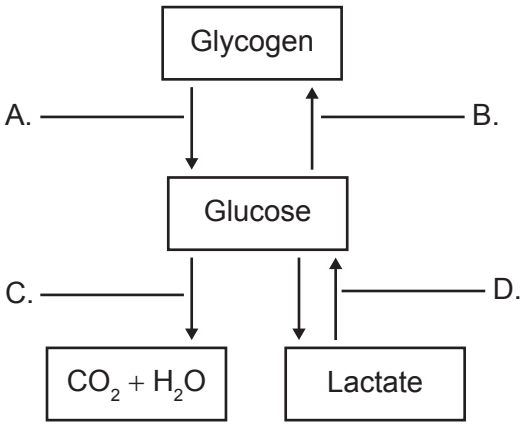
A. 1720 kJ

B. 1760 kJ

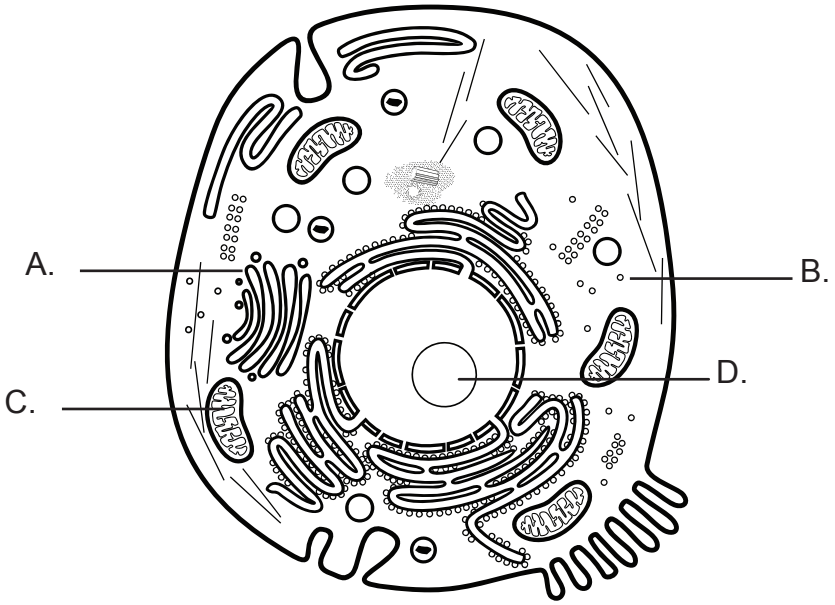
C. 4000 kJ

D. 4200 kJ

10. The diagram shows the relationships between substances. The arrows represent processes. Which arrow represents glycogenolysis?



11. The diagram shows an animal cell. Which label represents a mitochondrion?



12. Which decrease during muscle contraction?

I. H zone

II. A band

III. Distance between Z lines

A. I and II only

B. I and III only

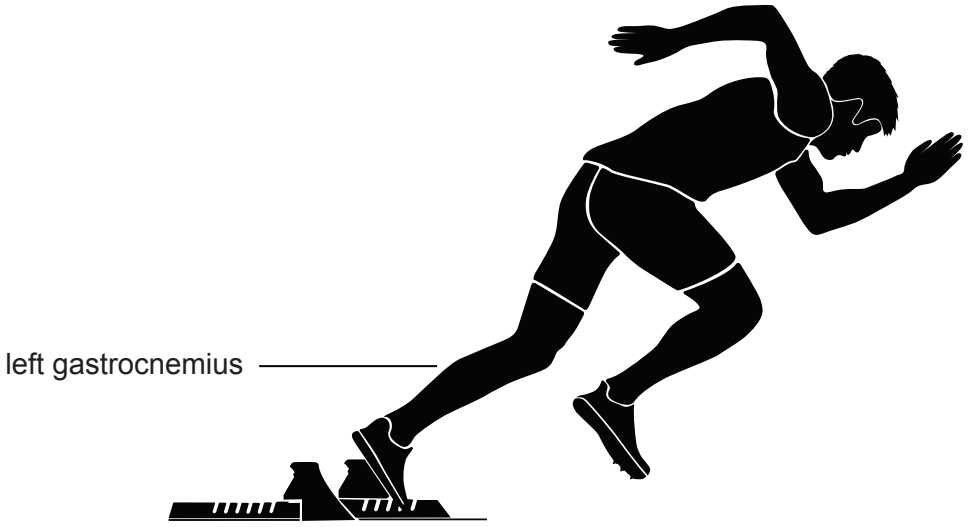
C. II and III only

D. I, II and III

13. Which option best describes the structure of the predominant muscle fibres in the quadriceps of a marathon runner?

	Colour	**Capillary density**	**Myoglobin content**
A.	Red	Low	Low
B.	White	Low	Low
C.	White	High	High
D.	Red	High	High

14. Which option states the types of contraction for the sprinter's left gastrocnemius as they push out of the blocks?



A. Isokinetic, eccentric

B. Isotonic, concentric

C. Isokinetic, concentric

D. Isotonic, eccentric

15. Which is a scalar measurement?

A. Velocity

B. Acceleration

C. Distance

D. Displacement

16. What is the correct equation for angular momentum?

A. Moment of inertia $\times$ angular velocity

B. Moment of inertia $+$ angular velocity

C. Moment of inertia $\div$ angular velocity

D. Moment of inertia $-$ angular velocity

17. The image shows the start of a sailing race.

Which motor skill classifications apply to the sailors?

A.	Gross	Open	Externally paced	Interactive
B.	Gross	Closed	Externally paced	Coactive
C.	Fine	Closed	Internally paced	Individual
D.	Fine	Open	Internally paced	Coactive

18. Which is a characteristic of short-term memory?

A. Information is lost within 0.5 seconds.

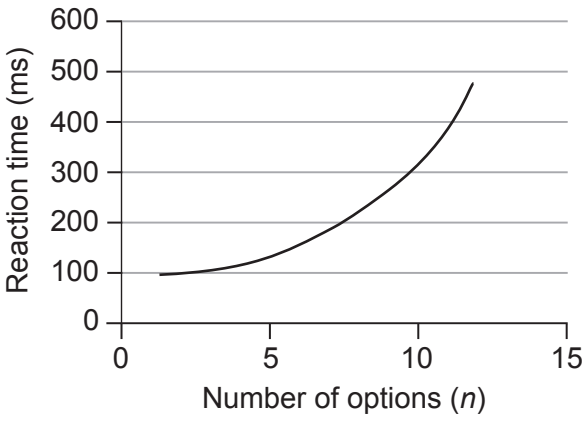
B. An unlimited capacity for information.

C. Information does not need to be rehearsed.

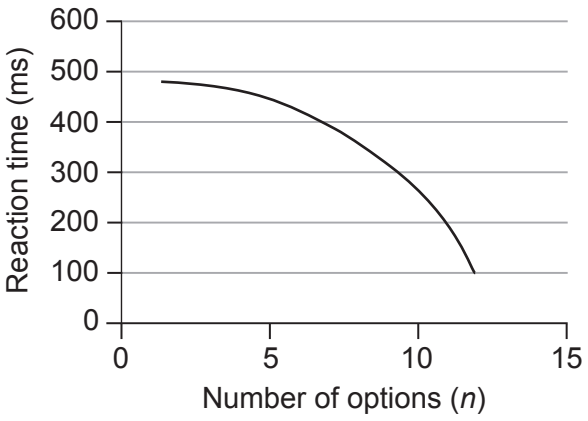
D. A capacity of 7 ± 2 pieces of information.

19. The graphs represent the relationship between reaction time and number of options. Which graph represents Hick's Law?

A.



B.



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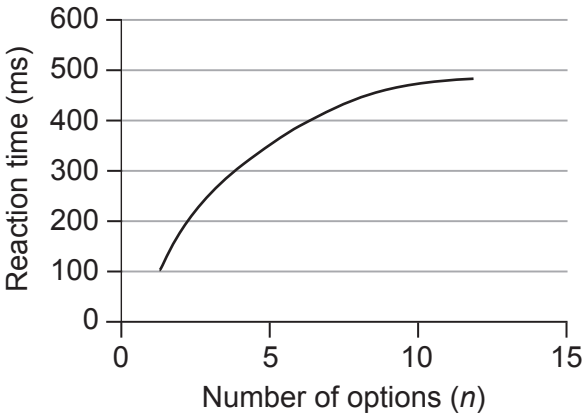

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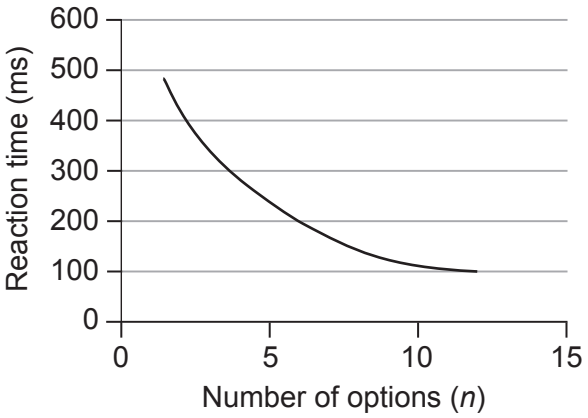


20. Which skill characteristics lead a coach to use whole presentation?

I. Is highly integrated

II. Is very complex

III. Is not meaningful in parts

A. I and II only

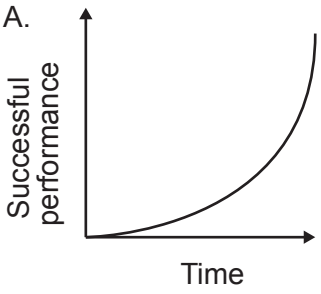
B. I and III only

C. II and III only

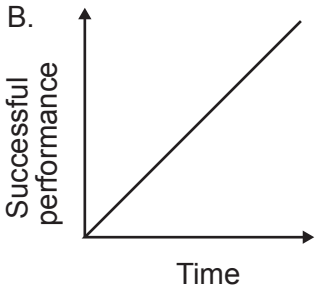
D. I, II and III

21. A new skier frequently falls on their first day of practice. However, after three days of practice, they are able to successfully travel down a slope. Which graph represents their learning during these three days?

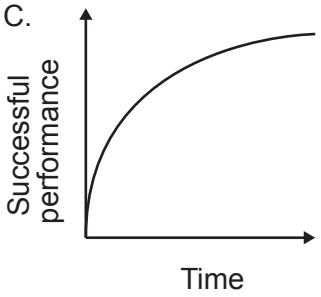
A.



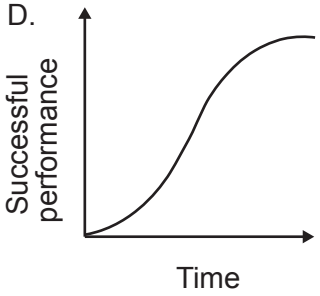
B.



C.



D.



22. What percentage of the population within a normal distribution does ± 2 standard deviations include?

A. 68 %

B. 75 %

C. 95 %

D. 99 %

23. Which test measures muscular endurance?

A. Flexed-arm hang

B. Cooper’s 12-minute run

C. Hand ball toss

D. Vertical jump

24. Which is a component of performance-related fitness?

A. Aerobic capacity

B. Balance

C. Strength

D. Flexibility

25. Which measure of exercise intensity is specifically used for children?

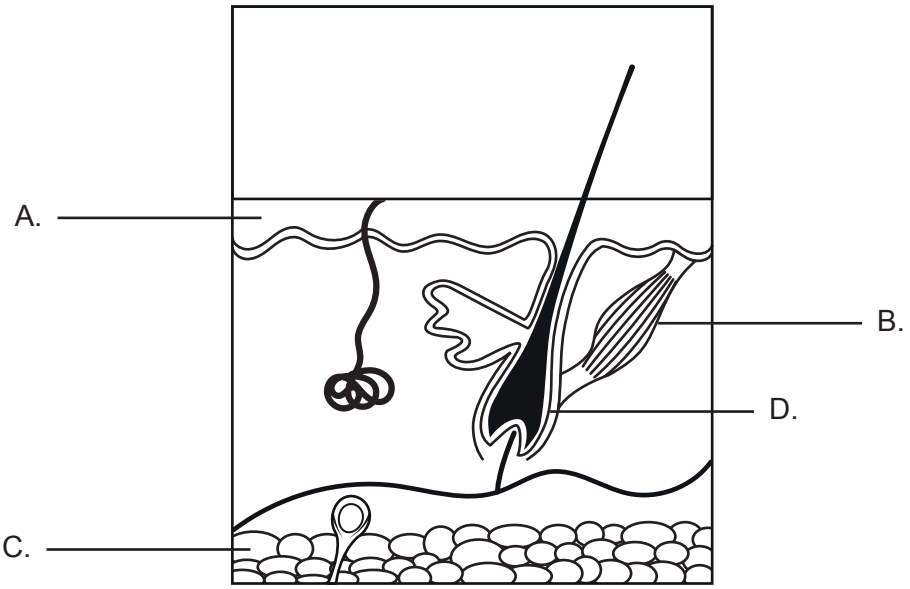
A. The Karvonen method

B. OMNI rate of perceived exertion

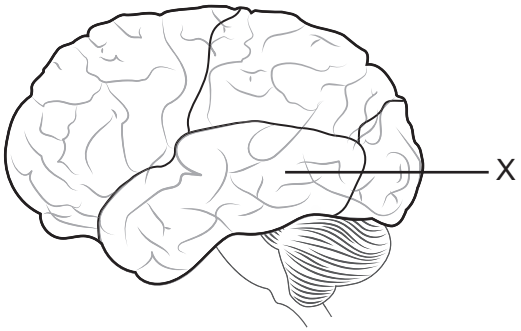
C. Borg rate of perceived exertion

D. CERT rate of perceived exertion

26. The diagram shows the structure of the skin. Which label points to the hair follicle?



27. The diagram shows the human brain. Which lobe is labelled X?



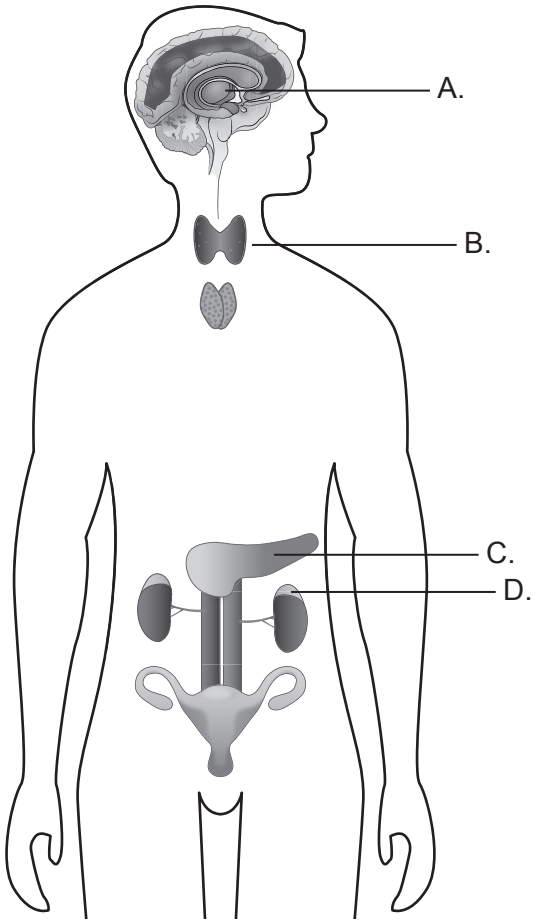
A. Frontal lobe

B. Parietal lobe

C. Temporal lobe

D. Occipital lobe

28. The diagram shows the location of various glands in the human body. Which gland produces glucagon?



29. What is fatigue in sports?

A. A non-reversible decline in performance due to poor sleep

B. A reversible, exercise-induced decline in performance

C. A reversible, unexplained decline in performance

D. A non-reversible decline in performance due to poor nutrition

30. What causes the development of peripheral fatigue in a 100 m sprint?

A. Increased muscle and liver glycogen

B. Depletion of acetylcholine

C. Depletion of creatine phosphate

D. Increased calcium ion release

31. Which has the lowest coefficient of friction?

A. Steel skates on ice

B. Athletic shoes with spikes on a running track

C. Rock climbing shoes on an artificial climbing wall

D. Football (soccer) boots on a turf field

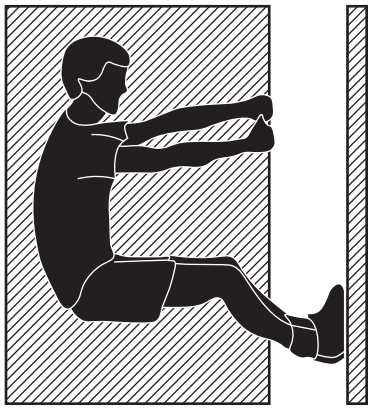
32. Which of the following images demonstrates static friction?

A.

B.

C.

D.



33. What is drag?

A. A force applied to a projectile to create lift

B. A force applied to attempt to move a stationary object

C. A force acting to oppose the motion of an object through a fluid medium

D. A force that acts parallel to the interface of two surfaces that are in contact

34. Which is a feature of non-linear pedagogy?

A. Process-orientated learning

B. Content-focused learning

C. Coach-led learning

D. Coach-orientated learning

35. Which of the following is featured in a flow chart?

A. Number of possessions for each player on the team

B. Frequency of unforced skill errors

C. Method of change in possession

D. Feedback on skill performance

36. A coach may choose to use both the phase analysis and performance outcome models to analyse a football (soccer) player. Which set of biomechanical analysis components can be applied as the player swings their leg forward to contact the ball to score a goal?

A.	Follow-through	Sport-specific principles	Retraction phase
B.	Action phase	Speed principles	Force principles
C.	Action phase	Force principles	Retraction phase
D.	Follow-through	Sport-specific principles	Speed principles

37. What percentage of genes do children inherit from each of their parents?

A. 25 % from the mother and 75 % from the father

B. 50 % from the mother and 50 % from the father

C. 75 % from the mother and 25 % from the father

D. 100 % either from the mother or father

38. Which option correctly describes the function of the immune system?

A.	Combat bacteria	Protect the body from infectious disease	Repair tissue
B.	Build new tissue	Protect nutrients	Combat bacteria
C.	Protect nutrients	Repair tissue	Produce hormones
D.	Protect the body from infectious disease	Produce hormones	Build new tissue

39. Which immune responses occur when the skin is broken during a combat sport?

	Inflammation of damage site	**Presence of white blood cells**	**Presence of platelets**
A.	Decreases	Decreases	Decreases
B.	Increases	Decreases	Increases
C.	Decreases	Increases	Decreases
D.	Increases	Increases	Increases

40. Which strategy minimizes the risk of infection for athletes?

A. Maintain a narrow and restricted diet

B. Reduce recovery time between training sessions

C. Wash clothes and body after each training session

D. Train maximally at each training session

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References:

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