

© International Baccalaureate Organization 2025

All rights reserved. No part of this product may be reproduced in any form or by any electronic or mechanical means, including information storage and retrieval systems, without the prior written permission from the IB. Additionally, the license tied with this product prohibits use of any selected files or extracts from this product. Use by third parties, including but not limited to publishers, private teachers, tutoring or study services, preparatory schools, vendors operating curriculum mapping services or teacher resource digital platforms and app developers, whether fee-covered or not, is prohibited and is a criminal offense.

More information on how to request written permission in the form of a license can be obtained from <https://ibo.org/become-an-ib-school/ib-publishing/licensing/applying-for-a-license/>.

© Organisation du Baccalauréat International 2025

Tous droits réservés. Aucune partie de ce produit ne peut être reproduite sous quelque forme ni par quelque moyen que ce soit, électronique ou mécanique, y compris des systèmes de stockage et de récupération d'informations, sans l'autorisation écrite préalable de l'IB. De plus, la licence associée à ce produit interdit toute utilisation de tout fichier ou extrait sélectionné dans ce produit. L'utilisation par des tiers, y compris, sans toutefois s'y limiter, des éditeurs, des professeurs particuliers, des services de tutorat ou d'aide aux études, des établissements de préparation à l'enseignement supérieur, des fournisseurs de services de planification des programmes d'études, des gestionnaires de plateformes pédagogiques en ligne, et des développeurs d'applications, moyennant paiement ou non, est interdite et constitue une infraction pénale.

Pour plus d'informations sur la procédure à suivre pour obtenir une autorisation écrite sous la forme d'une licence, rendez-vous à l'adresse <https://ibo.org/become-an-ib-school/ib-publishing/licensing/applying-for-a-license/>.

© Organización del Bachillerato Internacional, 2025

Todos los derechos reservados. No se podrá reproducir ninguna parte de este producto de ninguna forma ni por ningún medio electrónico o mecánico, incluidos los sistemas de almacenamiento y recuperación de información, sin la previa autorización por escrito del IB. Además, la licencia vinculada a este producto prohíbe el uso de todo archivo o fragmento seleccionado de este producto. El uso por parte de terceros —lo que incluye, a título enunciativo, editoriales, profesores particulares, servicios de apoyo académico o ayuda para el estudio, colegios preparatorios, desarrolladores de aplicaciones y entidades que presten servicios de planificación curricular u ofrezcan recursos para docentes mediante plataformas digitales—, ya sea incluido en tasas o no, está prohibido y constituye un delito.

En este enlace encontrará más información sobre cómo solicitar una autorización por escrito en forma de licencia: <https://ibo.org/become-an-ib-school/ib-publishing/licensing/applying-for-a-license/>.

**Sports, exercise and health science**  
**Standard level**  
**Paper 3**

29 April 2025

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

Candidate session number

1 hour

--	--	--	--	--	--	--	--	--	--

**Instructions to candidates**

- Write your session number in the boxes above.
- Do not open this examination paper until instructed to do so.
- Answer all of the questions from two of the options.
- Answers must be written within the answer boxes provided.
- A calculator is required for this paper.
- The maximum mark for this examination paper is **[40 marks]**.

Option	Questions
Option A — Optimizing physiological performance	1 – 2
Option B — Psychology of sports	3 – 5
Option C — Physical activity and health	6 – 7
Option D — Nutrition for sports, exercise and health	8 – 10



**Option A — Optimizing physiological performance**

1. A study evaluated the effects of heat acclimatization on exercise tolerance. Participants completed a time-to-exhaustion test in a hot-dry environment. The following data was recorded to establish baseline:
- rectal temperature
  - heart rate.

This test was then repeated after each of the following interventions:

- an 11-week aerobic training programme
- an 8-day heat acclimatization programme.

The graphs show rectal temperature and heart rate during the time-to-exhaustion tests.

Removed for copyright reasons

- (a) Identify the training intervention for which the lower heart rate during the time-to-exhaustion test was recorded.

[1]

.....

**(Option A continues on the following page)**



**(Option A, question 1 continued)**

- (b) Calculate the difference in rectal temperature at the end of the two interventions. [1]

.....  
.....

- (c) Compare and contrast the effects of the 11-week aerobic training programme and the 8-day heat acclimatization programme. [2]

.....  
.....  
.....  
.....

- (d) Analyse adaptations in sweat response associated with heat acclimatization. [2]

.....  
.....  
.....  
.....

**(Option A continues on the following page)**



**(Option A continued)**

2. An athlete is preparing for a marathon in a cold environment.

(a) Distinguish between training, overtraining, and overreaching. [3]

.....

.....

.....

.....

.....

.....

(b) Suggest how an athlete can avoid overtraining when planning their training for a marathon. [2]

.....

.....

.....

.....

(c) Describe the importance of the preparation phase in marathon training. [2]

.....

.....

.....

.....

**(Option A continues on the following page)**



**(Option A, question 2 continued)**

- (d) Outline the precautions that should be taken when exercising in cold environments. [3]

.....

.....

.....

.....

.....

.....

- (e) Evaluate the benefits and risks associated with the use of erythropoietin (EPO) as an ergogenic aid in marathon running. [4]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

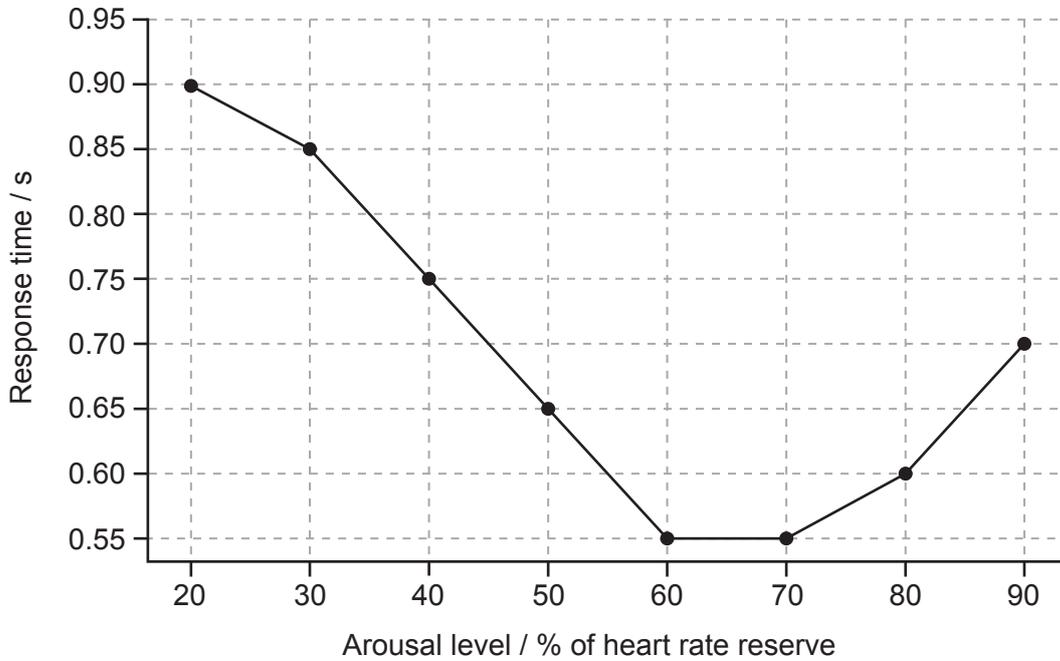
**End of Option A**



**Option B — Psychology of sports**

3. Participants performed a response time task to measure performance on a bicycle ergometer at various arousal levels, from 20% to 90% of heart rate reserve.

Response times for each arousal level are presented in the graph.



- (a) Identify which arousal level(s) had the fastest response time. [1]

.....

- (b) Calculate the difference in response time (in s) between the 20% arousal level and the 80% arousal level. [1]

.....  
.....

**(Option B continues on the following page)**



**(Option B, question 3 continued)**

(c) Using the data, discuss the association between arousal and performance.

[4]

.....

.....

.....

.....

.....

.....

.....

.....

**(Option B continues on the following page)**



20EP07

**Turn over**

**(Option B continued)**

4. (a) Analyse **three** ways social learning theory can help a soccer (football) coach improve team performance. [3]

.....

.....

.....

.....

.....

.....

- (b) The coach introduces new coaching methods. Describe how Atkinson's model of achievement motivation may influence the soccer (football) team's response to coaching. [3]

.....

.....

.....

.....

.....

.....

- (c) The coach recommends the use of imagery to improve team performance. Identify **three** possible advantages of this approach. [3]

.....

.....

.....

.....

.....

.....

**(Option B continues on the following page)**



**(Option B continued)**

5. (a) Distinguish between cognitive and somatic anxiety. [2]

.....

.....

.....

.....

.....

.....

(b) Analyse the phases of the psychological skills training (PST) programme. [3]

.....

.....

.....

.....

.....

.....

.....

.....

**End of Option B**



**Option C — Physical activity and health**

6. A study examined the prevalence of type 2 diabetes across various population groups. The age-adjusted percentages of affected males and females are presented in the graph.

**Prevalence of Type 2 Diabetes by Population Group**

*Numbers are age-adjusted % for population groups*

Population Group	Males (%)	Females (%)
A	14.3	14.8
B	10.2	8.6
C	12.2	12.1
D	11.5	12.0
E	8.0	6.9

- (a) Identify the group with the highest age-adjusted percentage of type 2 diabetes. [1]

.....

- (b) Calculate the difference in the percentage of type 2 diabetes between males and females in group E. [1]

.....  
.....

**(Option C continues on the following page)**



**(Option C, question 6 continued)**

- (c) Based on the data, evaluate the claim that males in population group B have a higher age-adjusted percentage of type 2 diabetes compared to females. [2]

.....

.....

.....

.....

- (d) Discuss **two** major risk factors for type 2 diabetes. [2]

.....

.....

.....

.....

**(Option C continues on the following page)**



**(Option C continued)**

7. In a public health campaign aimed at reducing the risk of coronary heart disease, educational materials are being developed to inform the public of:
- the importance of physical activity
  - the risks of physical inactivity
  - strategies for maintaining a healthy lifestyle.

(a) Define *coronary heart disease*. [1]

.....

.....

(b) Analyse how physical inactivity can lead to cardiovascular disease. [3]

.....

.....

.....

.....

.....

.....

(c) Outline how chemical signals affect appetite regulation after eating. [3]

.....

.....

.....

.....

.....

.....

**(Option C continues on the following page)**



**(Option C, question 7 continued)**

- (d) Outline the physical activity recommendations for healthy adults to avoid developing coronary heart disease. [2]

.....

.....

.....

.....

- (e) Suggest **three** personal barriers encountered by individuals planning to engage in physical activity. [3]

.....

.....

.....

.....

.....

.....

- (f) Outline environmental approaches for enhancing adherence to exercise for adults at risk of cardiovascular disease. [2]

.....

.....

.....

.....

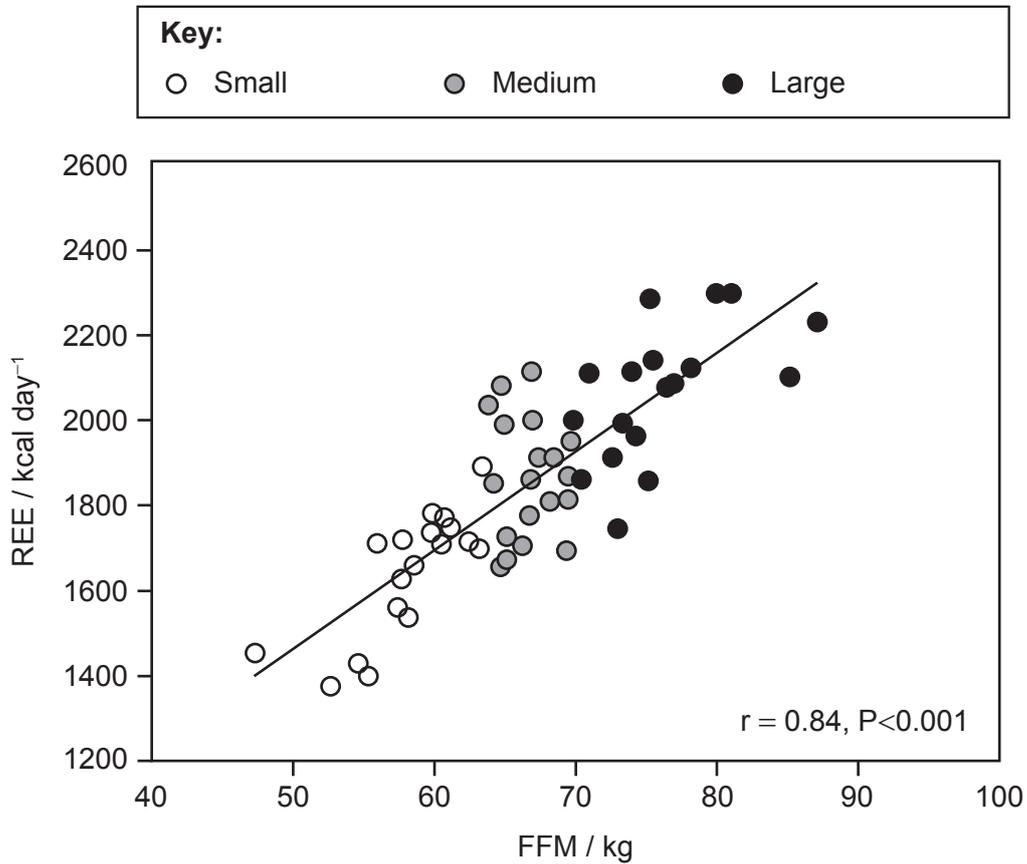
**End of Option C**



**Option D — Nutrition for sports, exercise and health**

8. Researchers examined the relationship between fat-free mass (FFM) and resting energy expenditure (REE).

Athletes were grouped into three categories according to their FFM: small, medium, and large. The graph displays the relationship between FFM and REE across these groups.



- (a) Identify which group has the highest REE. [1]

.....

- (b) Estimate the REE for an athlete with a FFM of 65 kg. [1]

.....

(Option D continues on the following page)



**(Option D, question 8 continued)**

(c) Comment on the relationship between FFM and REE as shown in the graph. [2]

.....

.....

.....

.....

(d) Suggest how higher levels of FFM affect athletic performance. [2]

.....

.....

.....

.....

**(Option D continues on the following page)**



**(Option D continued)**

9. An athlete is preparing for a 20 kilometre swim.

(a) Explain the importance of selecting low glycemic index (GI) carbohydrates for a pre-competition meal. [2]

.....  
.....  
.....  
.....

(b) List the enzymes responsible for the digestion of carbohydrates, fats and proteins for an endurance swimmer. [3]

Carbohydrates: .....  
Fats: .....  
Proteins: .....

(c) Outline **two** reasons why hydration is important for an endurance swimmer. [2]

.....  
.....  
.....  
.....

**(Option D continues on the following page)**



**(Option D, question 9 continued)**

(d) Discuss the regulation of electrolyte balance during the swim.

[4]

.....

.....

.....

.....

.....

.....

.....

.....

**10.** Identify the type of muscle fibre associated with each level of glycogen content.

[3]

Low: .....

Medium: .....

High: .....

**End of Option D**

---



**Disclaimer:**

Content used in IB assessments is taken from authentic, third-party sources. The views expressed within them belong to their individual authors and/or publishers and do not necessarily reflect the views of the IB.

**References:**

8. Oshima, S., et al, 2011. Fat-Free Mass Can Be Utilized to Assess Resting Energy Expenditure for Male Athletes of Different Body Size. *Journal of Nutritional Science and Vitaminology*, 57, pp. 394–400. Source adapted.

**All other texts, graphics and illustrations © International Baccalaureate Organization 2025**



20EP18

Please **do not** write on this page.

Answers written on this page  
will not be marked.



20EP19

Please **do not** write on this page.

Answers written on this page  
will not be marked.



20EP20