

## SPORTS, EXERCISE AND HEALTH SCIENCE

### Overall grade boundaries

#### Standard level

Grade:	1	2	3	4	5	6	7
Mark range:	0 - 17	18 - 31	32 - 43	44 - 55	56 - 67	68 - 78	79 - 100

### Standard level internal assessment

#### Component grade boundaries

Grade:	1	2	3	4	5	6	7
Mark range:	0 - 8	9 - 16	17 - 22	23 - 27	28 - 33	34 - 38	39 - 48

### General comments

This was the third November session for the Sports, exercise and health science pilot course (SEHS) and it was a pleasure to moderate teachers who had clearly taken time and effort to act on the feedback provided in the November 2010 subject report. Practical programmes once again were appropriate and in line with the Internal Assessment (IA) criteria. In most centres the criteria were applied rigorously.

Teachers who included the “complete”, “partial” and “not at all” breakdown of their marks were providing helpful information to the moderators. This, combined with comments and feedback to the candidates, made it very clear as to how the teachers were awarding marks. Clearly all teachers took a lot of time and trouble to prepare their IA sample. This effort is very much appreciated. It is a lot easier for a moderator to support a teacher’s marks when there are clear notes accompanying the sample.

Teachers must enclose all instruction sheets and/or summaries of oral instructions for the investigations in the moderation sample. Most centres complied with this requirement. When Data collection and processing (DCP) is being assessed, the method designed by the candidate or provided by the teacher is required. When Conclusion and evaluation (CE) is being assessed, all the steps in the scientific process are needed for moderation.

It would be helpful if the full IA title (candidate) was included on investigations on the 4/PSOW form as it would be easier for the moderator to match up the candidate work which was to be assessed. Forms were generally completed correctly, however, some cover sheets for candidates were not completed and this made it hard to see which marks/ experiments/ parts of experiments were to be moderated.

It was clearly evident that some teachers linked and worked with other colleagues to ensure internal standardization had taken place. Centres should continue to link and work with the Biology Department to set a common standard and aid with the internal standardization process.

Overall, teachers entered several marks for each criterion from a variety of investigations. This is very encouraging to see. It implies that the candidates are receiving adequate feedback as they proceed through the practical scheme of work. One can even see the learning curves of candidates who pay attention to this feedback.

Some centres sent photocopies of the candidate work. Usually these were of good quality. The problem is that graphs and diagrams using colour can be confusing. It would be better to send the originals and keep back a photocopy.

Note: atypical candidates should be replaced in the sample. These include candidates whose work is incomplete or transfer candidates where a substantial part of their work has been marked by another teacher.

## The areas of the programme that proved difficult for the candidates

The research question/focused problem is different to the teacher prompt and should include the dependent (you measure) and the independent (you change) variables. The variables stated in the research question must be those that are directly measured. The dependent and the independent variables were not always clear and it is ideal to have 3-5 repeats for each variable. Candidates must ensure that their investigations have the potential to generate sufficient data for substantial processing. A lack of data meant that individual averages could not always be processed. A minimum of five is also needed to undertake further statistical analysis in the form of standard deviation.

Each data table should include a descriptive title containing both the dependent and independent variables. Every header requires appropriate units along with the error margin. Many candidates were missing quite obvious conventional points such as indicating uncertainties in their data. The number of decimal places must also reflect the precision of the measuring instrument and all decimal places must be consistent in raw and processed data. Raw data was not always recorded as candidates recorded averages only (processed).

Only processed data is to be presented graphically and the x and y-axis must be clearly labelled. When candidates use error bars on graphs, there needs to be an indication of what these values represent. Teachers are also missing these points and a few were marking over generously.

There was evidence that literature sources were being consulted to provide valuable background information in determining the initial research question and in the discussion of the results. Teachers could further challenge their candidates to add value to their own data findings by referring/comparing/contrasting with an existing data or theory reference. Candidates also need to be cautious when relying solely on websites regarding references. The Internet is to be used to complement more quality assured sources. Care is needed in the correct ways to present citations of references.

Many candidates failed to score full marks on the conclusion and evaluation component and this is an immediate area for attention. To maximize the marks in CE (aspect 1) candidates should include data from their results to back up findings and refer to the appropriate statistical test to discuss the significance of the data. When evaluating procedures (aspect 2) candidates were often commenting on mistakes rather than methodical errors or significant ways to improve the investigation. Candidates could focus on repeats or increasing the data range of the independent variable. Few candidates discussed the significance of the error and only identified relevant weaknesses.

## The levels of knowledge, understanding and skill demonstrated

The variety of investigations, and the duration and coverage of the practical programme were generally good. The quantity and type of data was very good in some centres and adequate in the majority.

## Rules applied by the moderators

In the event of the teacher providing too much guidance to the candidates or ignoring the criteria the following scale is applied by the moderators:

Criterion	Problem	Teacher awards	Maximum moderator can award
Design	Teacher gives the problem or research question.	c; c; c = 6	p; c; c = 5 Candidates could have identified their own control variables.
Design	It is clear that the candidates have been told precisely what apparatus and materials they require and have not modified it.	c; c; c = 6	c; c; n = 4
Data collection & processing	The candidates have used a photocopied data table with headings and units.	c; c; c = 6	p; c; c; = 5 Candidates could have added uncertainties or relevant qualitative observations.
Data collection & processing	The candidates have been told, on the method sheet, to draw a graph from their raw data and which variables to plot or process the data in a particular way.	c; c; c = 6	c; n; c = 4
Conclusion and evaluation	The candidate has only indicated as a criticism that they ran out of time and their only suggestion as an improvement is that they should repeat the investigation.	c; c; c = 6	c; n; p = 3

## The Criteria

### Design (D)

The range and suitability of work varied between centres. Some teachers need to set general themes with plenty of scope for different investigations in order to avoid situations where the whole class is attempting the same investigation. Teachers should not be afraid to counsel candidates away from investigations that will lead to trivial results. It is good practice for candidates to follow through their own designs, which most centres seem to be doing. Very thorough background research was evident in some designs, and this aided candidates in their discussion. Candidates should not be told which type of equipment to use to measure data i.e. spirometer for vital capacity or which calculations to use to process data.

The programme requires that the investigations assessed should contain quantitative data. There were no cases of centres presenting only qualitative data. Associated qualitative data is, however, to be expected.

The three categories of variables must be clearly identified. Candidates need to be taught what the different variables are and what their relationship is. The range of values of the independent variables was not always sufficient to establish trends. The number of repeats was not always sufficient to permit statistical analysis. The type of statistics being performed was of an excellent level in some centres.

Candidates could further increase their marks for their Design by (1) clearly stating what they are actually measuring in the dependant variable e.g. time in seconds and (2) highlighting all key variables. Candidates could include the significance of the variables they hope to control, along with reference to the variables they could not control (confounding variables).

Standard protocols will, no doubt, be used by the candidates when they design their investigations. However, these standard protocols must be significantly modified or applied to the candidate's own investigation. For example, if fitness is being investigated and the candidate uses the Harvard step test, this is legitimate. If the investigation is simply to determine the fitness of one person then it remains trivial and it repeats many textbook investigations. If the investigation is used to determine the effect of a particular training programme on fitness levels, the investigation becomes more substantial. When candidates design investigations that require different individuals as subjects they should consider the problems of obtaining a representative sample.

Centres could also encourage candidates to report briefly on ethical issues in their design and again in their conclusion.

### Data collection and processing (DCP)

Every header requires appropriate units along with the error margin. Error margin could be human error as this is often more applicable (e.g.  $\pm 0.5$  seconds,  $\pm 0.5$ cm). The number of decimal places must reflect the precision of the measuring instrument. If raw data is included as appendices then candidates need to be careful to avoid mistakes or omissions when processing the data.

It may be that class data is required in order for the candidate to gain access to sufficient data for significant data processing and the determination of uncertainties. If class data is to be used and DCP is to be assessed, a number of precautions must be respected. The candidates must present their own data and this can be achieved either by (1) presenting their own data first or (2) clearly identifying which is their own data in a pooled data table. The candidates must plan and produce their own data table. Copying a table from other candidates will be counted as collusion. Teachers who provide the candidates with a pre-formatted data table can expect their candidates to be moderated down.

When calculations are made it is important that the pathway to the answer is clear. This does not mean there has to be a worked example but a result that springs up out of nowhere will not be credited.

Where the moderators had to reduce the marks of the teachers it was for the following reasons:

- No uncertainties were given in the tables of data collected using measuring instruments
- There were inconsistent decimal places in tables
- The decimal places did not correspond to the precision of measurements
- The processed data (2 decimal places) on occasions had a higher degree of precision than the raw data
- Lack of data meant that individual averages could not always be processed
- There were no associated qualitative data
- Raw data were plotted in graphs that do not actually reveal anything (e.g. maxima, minima, optima or intercepts)
- Raw data were plotted when the mean should have been calculated and plotted
- There was no statistical treatment of the data
- There was no presentation of uncertainties in graphical data either by using trend lines or error bars
- The error bars, when used, were not identified or accompanied by an explanation of what these values mean
- Trend lines were not used to express uncertainties
- Tables did not have a descriptive title containing both the dependent and independent variables.

### **Conclusion and evaluation (CE)**

In order for candidates to gain the highest possible marks within the CE (Aspect 1) candidates should include data to back up their findings. Excellent reference to the appropriate statistical test to discuss the significance of the data was evident in some centres.

As a rule, teachers were encouraging the candidates to collect sufficient data so that conclusions could be drawn from the results. On occasions, the statistical analysis was sufficient to reveal relationships between the variables and their degree of significance. However, candidates should include data from their results to back up findings and refer to the appropriate statistical test to discuss the significance of the data. Generally, literature values were consulted by the candidates.

Candidates in some centres show that they have developed a mature sense of criticism of the investigation. Their evaluation of their results is based upon a balanced critical analysis of the data. Candidates who have not developed this skill tend to remain superficial in their evaluation. The weaknesses they identify are hypothetical without evidence to back it up. For weaker candidates, the experimental weaknesses are restricted to having a limited amount of time or errors in their own manipulation that once again remains hypothetical (“I could have incorrectly measured the temperature”).

Candidates should describe major weaknesses and suggest a sensible improvement. The evaluation could also be presented as a table: (1) weakness, (2) significance of error and (3) suggested improvement. The inclusion of a separate column for the significance of the error helps draw candidates to the importance of discussing the significance of the error in addition to solely identifying weaknesses. Suggested modifications were superficial from weaker candidates and many teachers were marking over generously. Evaluation is a good discriminator of the high achieving candidates and teachers would do well to remember this when they are marking their candidates' work.

### **Manipulative skills (MS)**

There is evidence that candidates are being exposed to a very good range of investigations. This ensures that the manipulative skills can be assessed correctly.

### **Ethics and Safety**

SEHS will inevitably involve investigations using human subjects. Safety must be paramount to investigations. Using fellow candidates for investigations into the effect of exercise on the heart rate can be considered unsafe if the health status of the candidates is not determined first. The International Baccalaureate (IB) does not wish to inhibit investigations but it does want to stimulate a responsible attitude towards experimentation. If necessary, teachers may need to make adjustments to their Practical Scheme of Work especially where human volunteers are involved. Candidates could also be encouraged to report briefly on any ethical issues, which arise during their investigations e.g. ensure confidentiality of participants. The animal experimentation policy and ethical practice poster can be found on the subject homepage on the Online Curriculum Centre (OCC).

## ICT coverage

There was evidence of excellent ICT coverage by some centres.

Centres seem to have made an effort to equip themselves with the necessary materials to carry out data logging. However, the use of this material in investigations for internal assessment of the criteria needs to be carried out with care. Teachers and candidates are strongly advised to read the relevant section of the subject guide.

Graph plotting using software was perhaps the easiest and most widespread for centres to apply. However the signs are that some candidates still need to be taught the correct conventions of graphing. There is a tendency to use bar charts for everything amongst the weakest candidates, perhaps because it is the default setting. Legends (keys) are not always necessary and some candidates do not seem to know how to de-select them. When they are needed the candidates often have difficulty labelling them appropriately – candidates often present the different curves as “series 1” and “series 2”. When candidates used a scatter plot, a trend line was not always used when it was appropriate.

The use of spreadsheets for data processing was less apparent in the moderated investigations. When spreadsheet tables are inserted into document files the conventions of presenting tabulated data still need to be ensured (e.g. centring numbers, adjusting the number of decimal places, column headings).

## The Group 4 Project

This project was used correctly for assessment of Personal Skills (PS) and no other criterion.

## The type of assistance and guidance teachers should provide for future candidates

- Read the feedback from this session and act upon it.
- Consult the OCC for Teacher support material (TSM) for the IA component of the course. The TSM shows application of the criteria in the assessment of practical work. It consists of a series of investigations or part investigations by candidates that have been assessed by moderators using the assessment criteria.
- Apply the internal assessment criteria rigorously.
- Ensure that the open-ended theme that you set has enough scope to provide a variety of research questions.
- Give the candidates experience in identifying independent, dependent and controlled variables.
- Encourage the candidates to make additional observations about their experiment.
- Ensure that the investigations have the potential to generate sufficient data for substantial processing.
- Teach the candidates that plotting graphs of raw data is often insufficient.
- Encourage the candidates to carry out research into the background literature both before starting an investigation and once the results are complete.

- CE Aspect 1 (concluding) should include data to back up findings and reference to the appropriate statistical test to discuss the significance of the data.

## Standard level paper one

### Component grade boundaries

<b>Grade:</b>	1	2	3	4	5	6	7
<b>Mark range:</b>	0 - 7	8 - 10	11 - 14	15 - 17	18 - 21	22 - 24	25 - 30

### General comments

Each session teachers are invited to submit comments about each exam. These forms can be downloaded from the OCC. These comments provide some of the evidence used by the senior examining team during the Grade Award meetings. All centres submitted G2 forms. Most stated that the level of difficulty was appropriate, with one centre stating it was too easy. All reported that N11 was of a similar standard in comparison with last year's paper, and one reported 'no applicable'. Of the five centres, three reported that the clarity of wording was good and two as satisfactory. All bar one centre stated that the presentation of the paper was good.

The following topics/sub topics were done really well:

1.2.4 define the terms *origin* and *insertion* of muscles; 1.1.1 distinguish anatomically between the axial and the appendicular skeleton; 2.1.1 list the principal structures of the ventilatory system; 2.2.2 distinguish between the functions of erythrocytes, leucocytes and platelets; 3.1.6 state the composition of a molecule of triacylglycerol; 3.2.2 state what glycogen is and its major storage sites; 4.1.1 label a diagram of a motor unit; 4.2.1 outline the types of movement of synovial joints; 4.3.7 define Newton's three laws of motion; 5.1.1 define the term *skill*; 5.2.2 describe Welford's model of information processing; 5.2.8 define the term *response time*; 6.1.2 calculate the mean and standard deviation of a set of values; 6.3.3 outline and evaluate a variety of fitness tests.

In general, the following areas were good but could be improved upon:

2.1.3 define the term *vital capacity*; 3.3.1 annotate the ultrastructure of a generalized animal cell; 3.3.9 describe the production of ATP from glucose and fatty acids by the aerobic system; 5.1.3 outline the different approaches to classifying motor skills; 5.3.6 outline the types of transfer.

The following areas evidenced some weaknesses and should/need to be improved upon: 1.1.3 state the four types of bones; 4.3.1 define the terms *force*, *speed*, *velocity*, *displacement*, *acceleration*, *momentum* and *impulse*; 6.2.1 outline the importance of specificity, accuracy, reliability and validity with regard to fitness testing; 6.4.2 discuss the key principles of training programme design.



## The strengths and weaknesses of candidates in the treatment of individual questions

The candidates were very well prepared for the following for the following questions: 2 (1.2.4); 3 (1.1.1); 4 (2.1.1); 6 (2.2.2); 10 (3.1.6); 11 (3.2.2); 15 (4.1.1); 16 (4.2.1); 18 (4.3.7); 21 (5.1.1); 23 (5.2.2); 24 (5.2.8); 27 (6.1.2); 29 (6.3.3).

The candidates were NOT well prepared for the following questions: 1 (1.1.3); 17 (4.3.1); 28 (6.2.1); 30 (6.4.2).

### Question 1

This was one of the most difficult questions on the paper that discriminated very effectively between candidates.

### Question 2

This was an easy question, answered correctly by almost all candidates. This question was a poor discriminator between the more and less able candidates.

### Question 3

This was a relatively easy question. This question was answered well by the most candidates, with some candidates choosing Option A.

### Question 4

This was the easiest question on the paper. All candidates chose the correct response (C).

### Question 5

This was a relatively difficult question, with options A, B and C as almost equivalent distractors.

### Question 6

Almost all candidates answered this question correctly.

### Question 7

This was a good, discriminating question. Option B proved to be a good distractor.

### Question 8

This was another good, relatively difficult and discriminating question. Option A was a good distractor.

### Question 9

There were two main distractors in this question (options A and C). 75% of candidates chose the correct option (B).

### Question 10

This was an easy question that did not discriminate well.

**Question 11**

A good, discriminating question.

**Question 12**

The main distractors were options A and C. 75% of candidates chose the correct option (D).

**Question 13**

This is a difficult question, with only 62% of candidates choosing the correct option. Option B was a strong distractor. This question was discriminated well between the more and less able candidates.

**Question 14**

This was a difficult question that discriminated well. Option B was a good distractor.

**Question 15**

This was one of the easier questions on the paper.

**Question 16**

This was an easier question, though option B was a good distractor.

**Question 17**

Along with question 1 this was the hardest question on the paper. This question did not discriminate well, with both the less and more able candidates getting it wrong.

**Question 19**

Option C was a good distractor. This question was a reasonable discriminator.

**Question 20**

Option B was a good distractor. The question discriminated well between candidates.

**Question 22**

This was one of the harder questions on the paper. Option B was a good distractor.

**Question 23**

This was an easier question but discriminated reasonably well between candidates. 15% of candidates chose option C.

**Question 25**

This was a good discriminating question. Option A was a good distractor.

**Question 26**

This was a reasonably difficult question and discriminated well between candidates.

**Question 27**

This was an easy question, with 90% of candidates choosing the correct option (B).

**Question 30**

This was one of the harder questions on the paper and a good discriminator. Both options B and C proved to be distractors. It appears that some of the candidates may struggle with the physics aspect of SEHS.

## Standard level paper two

### Component grade boundaries

<b>Grade:</b>	1	2	3	4	5	6	7
<b>Mark range:</b>	0 - 7	8 - 15	16 - 20	21 - 26	27 - 32	33 - 38	39 - 50

### General comments

All centres submitted G2 forms for paper 2. The level of difficulty was reported as appropriate by all. In comparison with last year's paper one centre reported that this year's paper was a little easier and three that it was of a similar standard (one was not applicable). The clarity of wording was rated as mostly good, satisfactory by one centre. All bar one centre rated the presentation of the paper as good (one indicating that it was satisfactory).

Comments on the G2 forms suggested that the candidates were happy with the paper. There was a comment regarding the balance of the topics assessed in the paper and the distribution of marks per topic. An analysis of the marks allocated to topics was done by the senior examining team and they felt that perhaps this comment was valid. Comments such as these are invaluable during the pilot phase as both the course materials and examining team develop. This will be monitored during future paper editing meetings.

### The areas of the programme that proved difficult for the candidates

Overall there were some really excellent responses.

In section A the following areas seem to have proved difficult for some candidates:

Q2(a)(ii) the skeletal system [1.1.9]; Q2(b) and (c) the muscular system [1.2.5] and [1.2.1], Q3(b) nutrition [3.1.5]; Q3(c) and 4(a) carbohydrate and fat metabolism [3.2.4] and [3.2.5].

In section B it was pleasing to find that all three questions were attempted. The following areas challenged some candidates:

Q 6(a)(i) and (a)(ii) the characteristics and classification of skill [5.1.7] and [5.1.8]; Q6(d) principles of skill learning [5.3.6]; Q7(d) components of fitness [6.3.1]; Q7(e) principles of training programme design [6.4.3].

## The levels of knowledge, understanding and skill demonstrated

On the whole, the candidates seemed to have a good understanding of what was expected of them in this paper, and there were a high number of truly excellent papers. However, a few candidates really struggled with this paper. The examining team anticipated the less able candidates would have had a firmer grasp of knowledge and understanding of:

outline the features of a synovial joint; identify the location of skeletal muscles in various regions of the body; outline the general characteristics common to muscle tissue; explain how glucose molecules can combine to form disaccharides and polysaccharides; explain the role of insulin in the formation of glycogen and the accumulation of body fat; outline the terms glycogenolysis and lipolysis; define the term technique; state the relationship between ability, skill, and technique; outline the types of transfer; distinguish between the concepts of health-related fitness and performance-related (skill-related) fitness; outline ways in which exercise intensity can be monitored.

However, it needs to be highlighted there was a high percentage candidates who demonstrated a high level of knowledge and understanding of these topics in their answers.

## The strengths and weaknesses of candidates in the treatment of individual questions

### Question 1

Overall, sections a), b), d) and e), were done well, but sections c) and f) could be improved by some candidates.

### Question 2

- b) It was surprising that some candidates struggled with this assessment objective level one question.
- c) This appeared to be a straightforward question. However, several candidates attempted to answer this as a 'structural' question rather than a 'characteristics' question.
- d) This was done well by most candidates.

### Question 3

- b) A few candidates struggled with the concept of 'condensation reaction'.
- c) This proved to be a challenging question and even some of the very able candidates did not achieve full marks on this part question.

### Question 4

- a) Some candidates struggled to answer this question.
- b) Most candidates had a firm grasp of the role of ATP in muscular contraction.

### Question 5

- a) and b) were very well done, especially the sliding filament theory.

- e) Candidates need to retain focus on answering the question rather than becoming too descriptive.

### Question 6

It is surprising that some candidates struggled with a), b) and d).

- c) This was one of the most demanding part questions in section B. However, candidates made a good attempt at answering the question.

### Question 7

Responses to a), b) and c) were satisfactory but could be improved upon.

Part questions d) and e) appeared to be straightforward and yet were misinterpreted by some candidates.

## The type of assistance and guidance teachers should provide for future candidates

- Teachers should consult the online curriculum centre (OCC) frequently for teacher support materials
- Familiarize candidates with the format and types of questions used in paper 2
- Teach drafting/planning with a focus on the command terms, especially those set at objective level 3
- Try to improve knowledge and understanding as detailed above
- Continue to provide candidates with and even wider range of sporting examples to highlight concepts.
- Teach the candidates to 'answer the question'.

## Standard level paper three

### Component grade boundaries

<b>Grade:</b>	1	2	3	4	5	6	7
<b>Mark range:</b>	0 - 6	7 - 12	13 - 17	18 - 22	23 - 26	27 - 31	32 - 40

### General comments

All centres submitted G2 forms for paper 3. All respondents stated that the level of difficulty was appropriate and of a similar standard to last year's paper. In terms of the suitability of this question paper, four centres stated that clarity of wording was good and one satisfactory. The same was true of the presentation of the paper.

The paper generated a range of responses demonstrating very secure knowledge and understanding within a high percentage of candidates. The majority of candidate responses evidenced that appropriate information and teaching had been made available to candidates and few questions generated poor responses from all candidates sitting the exam. In many

cases candidates were able to respond well to Objective 1 and 2 questions and also on Objective 3 questions. Interpretation of data provided in questions was dealt with confidently by most candidates who were able to extract specific data information and relate this to concepts. It was a real pleasure to assess this paper and both the candidates and teachers are to be commended.

## The areas of the programme that proved difficult for the candidates

Following the trend of the past two November sessions, Option A was the favoured option with Option D was a close second. It is re-assuring that the four options are attempted by candidates and it is especially pleasing to observe that option C is being addressed. In general, candidates were well prepared for this exam. However, the following areas seem to have been difficult for some candidates: A3(a) outline two principles of body thermoregulation in cold environments [A.2.3]; B2(b)(ii) evaluate how anxiety is measured [B.3.8]; C2(b) discuss the concept of energy balance [C.3.3]; D4(b) describe the relevance of GI with regards to carbohydrate consumption by athletes pre and post-competition [D.4.6].

## The levels of knowledge, understanding and skill demonstrated

In general, the candidates demonstrated a very good knowledge and understanding of their options. The examining team were delighted that candidates have a solid grasp of the expectations for this options paper and there were some really first class answers to several questions. The data questions were answered very well by the majority of candidates (but not all) and some candidates evidenced a comprehensive knowledge and understanding throughout their paper – very well done.

## The strengths and weaknesses of candidates in the treatment of individual questions

### Option A

This option was generally answered very well by many of the candidates.

### Question A3

- a) All candidates mis-interpreted this question which was based on principles of thermoregulation ((A2.3), rather than ‘the principal means by which the body maintains core temperature in cold environments’ (A2.11) or ‘the physiological responses to exercise in the cold’ (A2.15). A mark adjustment was made for each candidate who answered this option to compensate for the misinterpretation.
- b) It is important that candidates answer the question i.e. it is a ‘physiological’ question and not a ‘behavioural’ question.

### Option B

### Question B2

- b) (ii) Please ensure that candidates are familiar with the demands of the command term i.e. evaluate is to ‘assess the implications and limitations.

Similar to N10, an added-value aspect of answers to questions within this option is the apparent readiness of candidates to use sporting examples to clarify and strengthen their answers, and this is to be encouraged.

### Option C

#### Question C2

- b) Candidates need to retain focus and answer the specific question.

#### Question C3

- b) Please ensure that candidates understand that when a question is about 'physiological' and psychological' factors and there are 4 marks available – attempt for two marks on each factors i.e. the question is not for 4 marks for just one of the factors.

### Option D

Marks for this option suggest that some candidates are slightly less secure in their knowledge and understanding of Option D.

#### Question D1

- a) (i) and (ii) Whereas with the other three options the data analysis and interpretation was done really well, some candidates misinterpreted the presentation of the data.
- b) For the teachers – please note that the SEHS Guide AS D4.9 teacher's notes states 'limit to .....?'

#### Question D4

- b) Please note that this question was not about 'carbo-loading' – it was about the relevance of GI with regard to carbohydrate consumption.

### The type of assistance and guidance teachers should provide for future candidates

- Consult the online curriculum centre (OCC) frequently for teacher support materials.
- There were some truly outstanding papers presented and they were a joy to assess. To build on this try to ensure all candidates have a slightly firmer grasp of some areas:
  - environmental factors and physical performance i.e. principles of thermoregulation;
  - mental preparation for sport i.e. evaluate how anxiety is measured;
  - physical activity and obesity i.e. the concept of energy balance (this was a concern for N10 also);

- nutritional strategies i.e. describe the relevance of GI with regards to carbohydrate consumption by athletes pre and post-competition.
- Continue to encourage candidates to draft key elements of possible answers.