8825 – 6806M

Diploma Programme
Programme du diplôme
Programa del Diploma

Markscheme

November 2025

Sports, exercise and health science

Standard level

Paper 3

17 pages

Subject details: Sports, exercise and health science SL paper 3 markscheme

Mark Allocation

Candidates are required to answer **ALL** questions from two of the options **[2x20 marks]**.
Maximum total = **[40 marks]**.

Markscheme format example:

Question			Answers	Notes	Total
5	**c**	**ii**	this refers to the timing of the movements ***OR*** the extent to which the performer has control over the timing of the movement ✓. external paced skills are sailing/windsurfing/receiving a serve ✓.· internal paced skills are javelin throw/gymnastics routine ✓.		**2 max**

1. Each row in the "Question" column relates to the smallest subpart of the question.

2. The maximum mark for each question subpart is indicated in the "Total" column.

3. Each marking point in the "Answers" column is shown by means of a tick (✓) at the end of the marking point.

4. A question subpart may have more marking points than the total allows. This will be indicated by "**max**" written after the mark in the "Total" column. The related rubric, if necessary, will be outlined in the "Notes" column.

5. An alternative word is indicated in the "Answers" column by a slash (*/*). Either word can be accepted.

6. An alternative answer is indicated in the "Answers" column by "***OR***". Either answer can be accepted.

7. An alternative markscheme is indicated in the “Answers” column under heading **ALTERNATIVE 1** *etc*. Either alternative can be accepted.

8. Words inside chevrons **« »** in the “Answers” column are not necessary to gain the mark.

9. Words that are underlined are essential for the mark.

10. The order of marking points does not have to be as in the “Answers” column, unless stated otherwise in the “Notes” column.

11. If the candidate’s answer has the same “meaning” or can be clearly interpreted as being of equivalent significance, detail and validity as that in the “Answers” column then award the mark. Where this point is considered to be particularly relevant in a question it is emphasized by ***OWTTE*** (or words to that effect) in the “Notes” column.

12. Remember that many candidates are writing in a second language. Effective communication is more important than grammatical accuracy.

13. Occasionally, a part of a question may require an answer that is required for subsequent marking points. If an error is made in the first marking point, then it should be penalized. However, if the incorrect answer is used correctly in subsequent marking points, then **follow through** marks should be awarded. When marking, indicate this by adding **ECF** (error carried forward) on the script. “ECF acceptable” will be displayed in the “Notes” column.

14. Do **not** penalize candidates for errors in units or significant figures, **unless** it is specifically referred to in the “Notes” column.

Option A — Optimizing physiological performance

Question			Answers	Notes	Total
1.	**a**	**i**	Day 9✓		**1 max**
1.	**a**	**ii**	36.9 - 36.4 = 0.5✓	*Accept +/- 0.2* *Both calculation & answer must be present for a mark.*	**1 max**
1.	**a**	**iii**	Resting heart rate decreased✓ Exercise temperature decreased✓ Resting temperature decreased✓ Data is not shown to be statistically significant as no *p* value is given✓		**3 max**
1.	**b**		Training should replicate similar competition conditions (temperature, humidity)✓ Intensity should be lower at beginning and increase over time as the athlete acclimates✓ Most physiological adaptations occur within 10–14 days of heat exposure. (Accept answers within this range)✓ Athlete should progressively increase exposure to heat over 7–14 days✓ Maintain hydration and monitor core temperature and body mass✓ Allow sufficient recovery and avoid overexertion in the early stages✓ Sessions should last 60 to 100 min✓ Sweat response needs to be achieved in training✓ Sport-specific clothing should be used✓ Environmental chambers can be used to simulate different environments in an athlete's acclimation✓		**3 max**

Question			Answers	Notes	Total
2.	**a**		Training is performing exercise in an organised/ structured manner on a regular basis with a specific goal in mind✓		**1 max**
2.	**b**		Chronic overtraining can lead to changes in resting heart rate due to cardiac inefficiency✓ Persistent <u>fatigue</u> or tiredness that does not improve with normal rest✓ Athletes feel drained physically and mentally, leading to reduced motivation, performance✓ As training intensity is constant the athlete develops chronic muscle soreness as they are given no time to recover/ increased recovery time✓ Reduced immune function/ more susceptible to injuries due to fatigue/ increased stress training has put on the immune system✓ Overtraining can lead to increased sympathetic activity so it can be difficult to fall asleep✓ Fatigue due to decreased glycogen stores which are essential for muscle contraction and energy production✓ Overtraining can lead to increased GI issues increasing discomfort leading to decreased appetite✓ The athlete experiences a sudden and unexplained decrease in performance due to a combination of physiological factors✓ Loss of appetite, weight loss, or hormonal imbalances (e.g., reduced testosterone or cortisol changes)✓ Psychological indicators such as lack of motivation or increased irritability✓	*Max [1] for list of key words.*	**3 max**

2.	**c**		Macrocycles – overarching plan leading into event/ yearly✓ Mesocycles – separated into post-season, pre-season and in-season/ monthly✓ Early stages of the periodization is given over to general training/ fitness and as the athlete adapts training can become more specific✓ Microcycles – specific weekly/ bi-weekly plans✓ Microcycles allow for intensity and recovery to be balanced✓ Periodization allows for the principle of progression to be followed✓	*Max [1] for list.* *Max [2] for each cycle.*	**3 max**

Question			Answers	Notes	Total
3.	**a**		Hormones and related substances✓ Diuretics and masking agents✓ Beta-blockers✓ Stimulants✓ EPO✓	*Accept specific examples, max [1] per MP.*	**2 max**
3.	**b**		Athletes have a moral obligation to compete fairly against other athletes✓ ***OR*** Ensuring there is a consistent standard across competitions✓ Health and safety issues associated with drug use✓ Athletes are role models and should ensure they are meeting ethical obligations✓		**3 max**

Option B — Psychology of sports

Question			Answers	Notes	Total
4.	**a**	**i**	17✓		**1 max**
4.	**a**	**ii**	23+15+13=51✓	*Both calculation & answer must be present for a mark.*	**1 max**
4.	**a**	**iii**	Unchanged motivation was the most common response for individual and team sports✓ Higher motivation was the least common response for both, individual and team sports✓ The number of responses from athletes who play both individual and team sports were limited therefore difficult to draw a conclusion✓ Athletes in the both category responded equally to lower and unchanged motivation✓ Type of sport has little impact/ no evidence on the motivation of the athletes✓	*Award max [1] for theory that does not refer to data specifically.*	**3 max**
4.	**b**		The internal mechanisms and external stimuli which arouse and direct our behaviour «Sage 1974»✓		**1 max**

Question			Answers	Notes	Total
4.	**c**		Athletes seek challenges in order to extend themselves and develop their skills✓ By being persistent and pushing themselves as athletes when faced with adversity✓ Athletes ensure that their standards in training and performance are met. They consistently do more than required✓ Not afraid of failure and therefore take challenges that extend them as an athlete✓ When situations look ominous/ difficult athletes remain optimistic and still «expect themselves to» do their best✓ Athletes have high levels of confidence and expect themselves to do well in their given task✓ When feedback is given athletes accept it willingly and take on board suggestions for improvement✓ As athlete attributes performance internally, they don't make excuses if they perform poorly but rather look for personal improvement✓		**4 max**

<table>
<tr><th colspan="3">Question</th><th colspan="3">Answers</th><th>Notes</th><th>Total</th></tr>
<tr><td rowspan="4">5.</td><td rowspan="4">a</td><td rowspan="4"></td><td>State</td><td>Trait</td><td></td><td rowspan="4">Award only [1] mark for both components.</td><td rowspan="4">2 max</td></tr>
<tr><td>Refers to the response to a specific situation</td><td>Refers to the general level of stress an individual experiences/ personality</td><td>✓</td></tr>
<tr><td>Often temporary</td><td>Relatively stable/ enduring</td><td>✓</td></tr>
<tr><td>Player’s state anxiety may change within a game.</td><td>Player’s trait anxiety would remain the same throughout a game</td><td>✓</td></tr>
<tr><td>5.</td><td>b</td><td></td><td colspan="3">Sports Competition Anxiety Test (SCAT)✓</td><td></td><td>1 max</td></tr>
<tr><td>5.</td><td>c</td><td></td><td colspan="3">Improve concentration/ focus e.g. a player setting up to kick a penalty imagines the strike and then the ball flying successfully/ helps to take their mind away from the pressure of the moment✓
Build confidence e.g. a skier imagining a successful run down a difficult section helps to make them feel confident✓
Control emotional responses e.g. a surfer imagining they are catching a big wave under pressure of a competition✓
Acquire and practice sports skills e.g. a rock climber mentally rehearses themselves climbing a route✓
Cope with pain and injury e.g. a rugby player blocking out the fact that they have hurt part of their body so that they can perform successfully✓
Solve problems/ imagining all the possible problems they may have during the game/ sport and solving them mentally before they could happen✓
Acquire skills e.g. a novice tennis player imagines completing a serve before executing it themselves✓</td><td>Max [2] without an example.</td><td>3 max</td></tr>
</table>

Question			Answers	Notes	Total
6.			**Bio feedback** Helps people be more aware of their autonomic nervous system and be able to control reactions✓ Sensors measure information (feedback) about the body✓ E.g. HR monitor/ EEG/ respiration rate/ galvanic sweat rate/ thermal biofeedback/ muscle bio feedback✓ **Progressive muscle relaxation** Learning to tense then deeply relax separate muscle groups✓ Similar to meditation, but focuses less on breathing and more on muscle tension and relaxation✓ **Breathing techniques** One of the easiest, most effective ways to control anxiety and muscle tension✓ Athlete focuses on counting slowly for in breaths and out breaths✓ E.g. in for a 2 count and out for a 4 count✓	*Max [2] for techniques only.*	**4 max**

Option C — Physical activity and health

Question			Answers	Notes	Total
7.	**a**	**i**	D✓		**1 max**
7.	**a**	**ii**	3.7 - 3.6 = 0.1«%»✓	*Both calculation & answer must be present for a mark.*	**1 max**
7.	**a**	**iii**	Hypothesis cannot be accepted as the country with the 2nd highest % of the rural population (C) has the lowest levels of % of deaths from diabetes✓ Hypothesis can be accepted as the country with the highest % of the rural population (E) has the highest levels of % of deaths from diabetes✓ (B) has the 3rd largest % of the population living in rural areas ***OR*** (B) has the 2nd lowest level of % of deaths from diabetes✓ Data shows no correlation between the countries % of the rural population and % of deaths from diabetes✓	*Award max [1] for theory that does not refer to data specifically.*	**3 max**
7.	**b**		Is any bodily movement produced by contraction of gross/ skeletal muscles that «substantially» increases energy expenditure✓ Can occur spontaneously/be organized/ regularly as part of everyday life✓ Activity can be leisure/ occupational/ transport based e.g. walking to school, doing household chores, or cycling to work✓		**2 max**

Question			Answers	Notes	Total
7.	**c**		Increase in use of motor vehicles reducing the amount of activity undertaken✓ Changes to working patterns, e.g. working shifts may mean sleeping in the day/ too tired to exercise/ means people cannot be at training sessions✓ The use of technology to communicate so people can communicate from their room to others reducing the need to walk ***OR*** Labour saving devices reduce physical activity as part of day-to-day life✓ The rise of fast food/ deliveries means that people are not as active in their making of food✓ Nature of occupations has changed so fewer people work in manual jobs ***OR*** More work in jobs aligned with sedentary behaviour✓	*Zero credit for a list.*	**3 max**
8.			Lack of dietary calcium will lead to decreased bone density✓ Cigarette smoking interferers with the function of osteoblasts✓ Slim build (ectomorph) has thin bones increasing their risk✓ Physical inactivity causes bones to weaken✓ As people age bone density decreases✓ Family history✓	*Max [1] for list.*	**3 max**

Question			Answers	Notes	Total
9.	**a**		A state of emotional or affective arousal of varying, and not permanent, duration✓	*Accept any suitable definition, but there must be reference to a semi-permanent arousal state that is more than a momentary feeling.*	**1 max**
9.	**b**		Research suggests exercise is one of the most effective methods of alleviating a bad mood✓ Research supports the use of exercise in modifying fatigue, anger, anxiety, depression✓ Enhances the positive moods of vigor, clear thinking, energy, alertness, increased sense of well-being✓ Exercise allows for social interaction allowing people to feel connected✓ Exercise has been shown to produce growth of new brain cells✓		**3 max**
10.			Social commitments such as family make it hard to access✓ Physical environment/ availability to safe places to be physically active✓ Time/ due to busy schedules people are unable to make time for physical activity✓ Characteristics of physical activity offered can at times not be appealing to some✓ Leader qualities of instructors can be conflicting for some✓ Social and cultural norms within various ethnic groups can prevent people from accessing✓ Gym memberships, equipment, or travel costs can make participation difficult for individuals or families, particularly in low socioeconomic groups✓		**3 max**

Option D — Nutrition for sports, exercise and health

Question			Answers	Notes	Total
11.	**a**	**i**	Calcium Ion✓		**1 max**
11.	**a**	**ii**	35.9010 - 35.6547 = 0.2463✓	*Accept 0.25.* *Both calculation & answer must be present for mark.*	**1 max**
11.	**a**	**iii**	All electrolyte calcium and sodium values increase post-consumption✓ Chloride and potassium decreased post-consumption✓ Hematocrit does not increase✓ However, all *p* values>0.05✓ This suggests that no data is statistically significant✓ Hematocrit data is the least significant✓ Potassium data is almost statistically significant with a *p*-value of 0.051✓	*Award max [1] for referring correctly to data.*	**3 max**
11.	**b**		Monitor urine colour, the darker the colour indicates dehydration✓ Urine osmolarity measures the concentration of urine/ greater osmolarity indicates dehydration✓ Assessing body mass/ weight loss may be indicative of a change in hydration✓	*Award max [1] for list*.	**2 max**

11.	**c**		Sweating leads to reduced blood plasma✓ Loss of blood plasma results in increased blood osmolality✓ The hypothalamus is stimulated by lower fluid levels✓ The hypothalamus stimulates the pituitary gland to release ADH✓ ADH increases re-absorption of water from the kidneys✓ ADH increases water permeability of the renal tubules/ reduce urine volume/ collecting ducts✓ The Loop of Henle maintains the osmotic gradient that supports this process✓ Water balance is restored, ADH secretion decreases/ completing a negative feedback loop✓		**4 max**

Question			Answers	Notes	Total
12.			Thermic effect of physical activity✓ Thermic effect of feeding/ food✓ Non-exercise activity thermogenesis (NEAT)✓		**1 max**
13.			**Strengths** Can help replace lost water from sweat✓ Can replace lost electrolytes✓ Easily replaced glucose during training/ competition✓ **Limitations** Can be hard to digest whilst exercising✓ Can cause stomach cramps/ nausea✓ Commercial/ pre-made can be costly✓ Requires in-training usage to find optimal consumption✓	*Max [2] for strengths/ limitations.*	**3 max**

Question			Answers	Notes	Total
14.	**a**		15✓	*Accept any value, between 1-15.*	**1 max**
14.	**b**		**Pre-competition** Lower GI foods may be beneficial prior to exercise to ensure sufficient/ elevated blood glucose levels✓ This is due to providing a slow-release source of glucose to the blood without an accompanying insulin surge✓ Low GI foods before competition improve endurance ability/ reduce fatigue✓ **Post-competition** After a workout, the body is depleted of sugar and energy stores✓ This increases the need for sugar in the body✓ The muscles want to replenish the sugar that has been lost✓ High GI carbs consumed after a workout will be used more efficiently✓		**4 max**