

2017 HSC

Personal Development, Health and Physical Education

Marking Guidelines

Section I, Part A

Multiple-choice Answer Key

Question	Answer
1	B
2	C
3	A
4	C
5	D
6	D
7	C
8	A
9	D
10	B
11	D
12	A
13	A
14	B
15	C
16	B
17	B
18	C
19	B
20	B

Section I, Part B

Question 21 (a)

Criteria	Marks
• Sketches in general terms all the measures of epidemiology	3
• Sketches in general terms some of the measures of epidemiology	2
• Names measure(s) of epidemiology	1

Sample answer:

Mortality is related to measuring the death rates within a population. Morbidity is concerned with measuring the prevalence and incidence of illness and injury in the population. Infant mortality refers to deaths of young people less than one year of age. Life expectancy is the measure of average time a person is expected to live.

Question 21 (b)

Criteria	Marks
• Provides characteristics and/or features of a range of limitations associated with epidemiology	4
• Provides characteristics and/or features of a limitation associated with epidemiology OR • Sketches in general terms the limitations of epidemiology	2–3
• Provides relevant information associated with the use of epidemiology	1

Sample answer:

Epidemiology depends on valid data. This can often be difficult to obtain in emergency situations. Health workers in remote communities often lack the resources to conduct adequate data collection and lack of access may also present difficulties in communicating these data in a timely manner. Epidemiology is also constrained by the rapid changes in the health status of at-risk populations. This is because by the time valid and reliable data is collected and analysed, the conclusions for a course of action may already be too late.

Answers could include:

- Variations between population sub-groups
- Quality of life
- Whole picture eg mental health
- Inequities
- Health determinants.

Question 22

Criteria	Marks
<ul style="list-style-type: none"> • Makes evident the relationship between the risk factors and CVD • Makes evident the relationship between protective factors and CVD • Provides examples of both risk and protective factors that demonstrate their relationship with CVD 	5
<ul style="list-style-type: none"> • Provides characteristics and features of the risk and/or protective factors of CVD • Provides examples of risk and/or protective factors 	3–4
<ul style="list-style-type: none"> • Sketches in general terms the risk and/or protective factors of CVD • Provides a relevant example 	2
<ul style="list-style-type: none"> • Names risk or protective factors of CVD 	1

Sample answer:

Risk factors are those behaviours that increase the chance of developing CVD. These include non-modifiable factors (eg age, sex, family history) and modifiable factors (obesity, high blood pressure, smoking and alcohol consumption). The risk of CVD is increased for young males compared to young females due to the protective nature of oestrogen women experience pre-menopause. High blood pressure and smoking increase the risk of CVD due to the increased stress these activities place on the heart and vascular tissues. Specifically these factors result in atherosclerosis.

Good nutrition and regular physical activity are protective factors of CVD. A diet high in fibre and unprocessed foods (especially vegetables) can reduce hypertension and plaque build-up on vascular walls, while regular physical activity increases cardiovascular fitness. These both reduce the risk of developing CVD and can even be used as a means of treating those with CVD.

Question 23

Criteria	Marks
<ul style="list-style-type: none"> • Makes judgement(s) about the extent to which having a healthy ageing population benefits Australia’s healthcare system • Makes the relationship between healthy ageing and burden on Australia’s healthcare system evident • Provides examples that support the judgement made 	8
<ul style="list-style-type: none"> • Makes the relationship between healthy ageing and burden on Australia’s healthcare system evident • Provides example(s) that support the relationship 	6–7
<ul style="list-style-type: none"> • Provides characteristics and features of healthy ageing and its affects on Australia’s healthcare system 	4–5
<ul style="list-style-type: none"> • Sketches in general terms healthy ageing in Australia and its relationship to healthcare 	2–3
<ul style="list-style-type: none"> • Provides some relevant information about Australia’s growing and ageing population 	1

Sample answer:

Aged people consume more health resources than any other sector of the Australian population. Healthy ageing is when people maintain good health into old age. This can have a positive impact on health care in Australia. Healthy ageing can result from positive health behaviours and choices people have made throughout their life (eg participating in regular physical activity, good dietary choices, maintaining strong social bonds). These choices throughout life minimise the reliance on healthcare services as one ages as these individuals significantly reduce their risk of most non-communicable diseases and mental illness.

Encouraging the aged to stay healthy and live in their own homes takes pressure off healthcare infrastructure. Government initiatives support this by providing more community nurses to assess and treat elderly people in their homes if needed. By allowing these community healthcare workers to also administer and monitor medication, healthy elderly people can maintain largely independent lifestyles and not use hospitals and doctors’ offices for routine health concerns.

Healthy ageing populations also become less dependent on volunteering organisations and often become a significant component of their workforce. Many healthy aged individuals contribute to groups like Meals on Wheels and Community Transport.

A healthy aged individual is therefore able to have access to programs that enable them to remain in their own home and socially connected to their community. With a growing aged population, ageing healthily reduces one’s dependence on healthcare systems like hospitals and nursing homes and therefore reduces the use by this population of our healthcare system.

Answers could include:

- Reduced occurrence of chronic/lifestyle diseases
- Able to remain in the workforce therefore can remain in health care professionals
- Remaining productive and independent decreases risk of mental health concerns which are a major health issue in the population
- Reduced money spent on healthcare of the elderly which may then be spent on other health research areas of health promotion.

Question 24

Criteria	Marks
<ul style="list-style-type: none"> • Makes evident the relationship between specific vitamins and/or minerals and athletic performance • Provides relevant examples of how vitamins/minerals affect performance 	5
<ul style="list-style-type: none"> • Provides characteristics and features of vitamins and/or minerals that affect athletic performance • Provides relevant example(s) of how vitamins/minerals affect performance 	4
<ul style="list-style-type: none"> • Sketches in general terms how specific vitamin and/or mineral(s) affect performance • Provides relevant example(s) 	2–3
<ul style="list-style-type: none"> • Recognises and names vitamin(s) or mineral(s) that affect athletic performance 	1

Sample answer:

Iron and calcium are minerals which affect performance. Iron is found in the red blood cells and attaches itself to carry oxygen around the body. If an athlete does not have sufficient iron in their red blood cells, then the body’s ability to carry oxygen is diminished leading to premature fatigue. For example, an anaemic marathon runner will fatigue earlier in an event than one with optimal levels of blood iron.

Calcium is important for bone density. If an athlete is deficient in calcium, they will be susceptible to developing brittle bones, osteoporosis and hard tissue injuries. For example, female gymnasts with poor levels of dietary calcium are more prone to developing lower limb stress fractures.

Answers could include:

- Iron – improves oxygen carrying capacity for aerobic events
- Calcium – improves bone density
- Vitamin C – assists immune system
- Vitamin A – energy levels, immune system
- Vitamin B – energy levels
- Vitamin D – bone density
- Potassium – energy levels
- Magnesium – muscle soreness, cramping
- Sodium – cramping, may assist with hydration.

Question 25

Criteria	Marks
<ul style="list-style-type: none"> • Shows similarities or differences between two energy systems in terms of their sources of fuel, duration and causes of fatigue • Provides relevant examples 	7
<ul style="list-style-type: none"> • Provides characteristics and features of two energy systems in terms of their sources of fuel, duration and causes of fatigue • Provides relevant examples 	5–6
<ul style="list-style-type: none"> • Provides characteristics and features of two energy systems • Provides relevant example(s) 	3–4
<ul style="list-style-type: none"> • Sketches in general terms an energy system(s) 	2
<ul style="list-style-type: none"> • Provides some relevant information on an energy system 	1

Sample answer:

ATP/PC is an anaerobic energy system that does not require oxygen, compared to the aerobic system which does require oxygen. There is enough residual supply of ATP in our bodies to produce explosive muscular contractions over a very short period of time. The explosive movement causes a breakdown of the phosphate molecules in ATP to ADP and the by-product is energy. The system then relies on creatine phosphate to resynthesise ADP back to ATP, giving this system about 10–12 seconds of intense energy. The supply of ATP, while limited in duration, recovers quickly (approximately two minutes) but its high-energy release is optimal for repeated explosive activities with a rest period. The aerobic system does not facilitate high-energy release. For example, long jump and weightlifting largely call upon this energy system for peak performance.

By comparison, the aerobic system generates energy in the presence of burning oxygen. The system sources fuel from our body’s carbohydrate, fat and protein stores. The aerobic system can last for hours and really only becomes fully depleted when the sources of fuel are exhausted or oxygen is no longer present. Athletes such as marathon runners become fatigued during their event as they deplete their glycogen stores in their blood and liver, followed by their fat stores and then finally the readily available protein being stored in their muscles.

Question 26

Criteria	Marks
<ul style="list-style-type: none"> • Makes evident how the physiological adaptations individuals develop respond to a variety of principles of training • Provides examples that demonstrate the relationship between the training principles and the physiological adaptation 	8
<ul style="list-style-type: none"> • Provides characteristics and features of physiological adaptations in relation to the principles of training • Provides relevant examples 	6–7
<ul style="list-style-type: none"> • Provides characteristics and features of principles of training AND/OR physiological adaptations <p>OR</p> <ul style="list-style-type: none"> • Sketches in general terms physiological adaptations to the principles of training 	4–5
<ul style="list-style-type: none"> • Sketches in general terms a physiological adaptation to a principle of training <p>OR</p> <ul style="list-style-type: none"> • Sketches in general terms physiological adaptation(s) OR principle(s) of training 	2–3
<ul style="list-style-type: none"> • Recognises and names physiological adaptations AND/OR principles of training <p>OR</p> <ul style="list-style-type: none"> • Sketches in general terms types of training 	1

Sample answer:

When an athlete undertakes a training program, a variety of physiological adaptations occur in response to the stress that the body is placed under. The different principles of training will determine what type of physiological adaptation occurs.

When training aerobically, progressive overload and training thresholds are important. This involves the body working in the aerobic training zone (60–80%) while also gradually increasing the working load of the athlete, eg increasing distance or time an athlete runs, in order to gradually increase the training load and performance. The physiological adaptations that occur include a more powerful stroke volume and increases in cardiac output. The heart becomes more effective as it is a stronger muscle and can pump more oxygen with each beat. This also leads to a reduction in resting and working heart rate for a fit aerobic athlete. Cardiac output is more effective as a result of these training principles as oxygen is delivered with more efficiency to the working muscles through aerobic events.

In relation to strength training, specificity is important. By manipulating the number of repetitions and size of the weight, an athlete can either develop muscular strength or muscular endurance. Both types of training result in muscle hypertrophy. However, the effect on fast twitch or slow twitch development will be determined by the specificity of the training employed. For example a high jumper will use specific power and plyometric exercises to develop their fast twitch muscle capabilities.

Section II

Question 27 (a)

Criteria	Marks
<ul style="list-style-type: none"> • Makes the relationship clearly evident between the determinants of ONE major health issue and its effect on young people • Provides examples to support the relationship between the determinants and the health issue 	8
<ul style="list-style-type: none"> • Provides characteristics and features of determinants of a major health issue that effects young people • Provides examples of the determinants and the health issue 	6–7
<ul style="list-style-type: none"> • Sketches in general terms the determinants of a major health issue affecting young people • Provides examples of the determinants 	4–5
<ul style="list-style-type: none"> • Sketches in general terms a determinant of a major health issue affecting young people 	2–3
<ul style="list-style-type: none"> • Provides facts or information on determinants OR a health issue affecting young people 	1

Sample answer:

Road safety is a major health issue that affects young people.

Socioeconomic factors are one determinant of mortality and morbidity rates on the road. Young people are often studying or working parttime and therefore unable to afford new vehicles with superior safety features such as air bags, ABS and reversing cameras. They may also not be able to afford the regular maintenance requirements for their car or motorbike that will reduce the likelihood of road incidents. Therefore socioeconomically disadvantaged youths have increased risk on the road.

Sociocultural factors are another determinant that affects young people on the road. The media is everywhere; young people are bombarded with risk-taking behaviour on the road via the media. Examples include car companies advertising how fast the car travels, and social media websites such as YouTube where videos of young people playing ‘chicken’ on busy motorways are uploaded. This increases risk-taking behaviour and therefore affects the safety of young people on the road. This is because of the increased peer pressure and competing for the highest number of ‘views’ and ‘likes’ on social media websites.

Question 27 (b)

Criteria	Marks
<ul style="list-style-type: none"> • Provides a judgement on the effectiveness of government AND non-government strategies targeting young people in relation to addressing major health issues • Uses relevant examples to support the response • Provides a logical and cohesive response 	11–12
<ul style="list-style-type: none"> • Shows the effect of government AND non-government strategies targeting young people in relation to addressing major health issues • Uses relevant examples to support the response 	8–10
<ul style="list-style-type: none"> • Provides characteristics and features of government and/or non-government strategies targeting young people in relation to major health issue(s) 	5–7
<ul style="list-style-type: none"> • Sketches in general terms strategies that target health issue(s) of young people <p>OR</p> <ul style="list-style-type: none"> • Sketches in general terms a major health issue that affects the health of young people 	3–4
<ul style="list-style-type: none"> • Recognises and names government and/or non-government strategies targeting young people <p>OR</p> <ul style="list-style-type: none"> • Provides an example of a major health issue affecting young people 	1–2

Sample answer:

Governments develop legislation and public policies to promote better health for young people. Road safety is a major health issue representing the greatest cause of unintentional death for young people.

The government has implemented road and special licensing laws for young drivers including legislation around passenger limits, driving curfews, log books, P-plate licence restrictions on speed and Zero BAC levels, and driving high performance vehicles. Implementation of strategies and health promotion campaigns include Plan B and Zero BAC level for P-plate drivers. The education around zero alcohol consumption provides clarity as opposed to the misleading information around the number of standard drinks an individual can have in a certain time frame before driving. This strategy has seen a reduction in fatalities caused by drink driving for young people.

Another example of a government strategy targeting young people is Headspace, which addresses mental illness in young people. It provides intervention services aimed at reducing mental health issues and suicide in teenagers. The effectiveness of this strategy relies heavily on access to services. Centralising these reduces accessibility for teenagers in remote and regional areas. An example of this is when the Headspace offices in Grafton were moved to the larger metropolitan centre of Coffs Harbour.

Non-government initiatives focus on social action, that is an activity aimed at enhancing the wellbeing of others by acting as a group to bring about change. Initiatives focusing on road safety including RRISK, U Turn the wheel and RYDA programs are run and funded by Rotary and other community organisations. The aim of such programs is to increase education and stimulate discussion around fatigue, drink driving and risks associated with young people on roads, with a strong emphasis on the consequences of their actions. Programs run in country areas where fatalities are high due to increased commute times, road quality and driver fatigue have seen an increase in education and decreased the prevalence of mortality in these areas.

A strategy related to mental health, which is a rising concern for young people, is the R U Ok? Day. This initiative is dedicated to reminding people to ask friends, family and colleagues the question in a meaningful way. It aims to increase the education and awareness of mental health issues and educates people on the questions to ask and how to respond in a variety of situations to help support those who are suffering. It promotes meaningful and regular connections which are one thing anyone can do to make a difference to someone who might be struggling. Strategies like this have been introduced to reduce the rate of suicide in young people. However, many health issues now have a day or even a month of recognition (eg Movember, White Ribbon Day, World Mental Health Day) meaning that they all become less significant and meaningful as a health promotion initiative.

The combination of both government and non-government initiatives protects and promotes the health of young people by improving their ability to make positive health choices.

Question 28 (a)

Criteria	Marks
<ul style="list-style-type: none"> • Makes the relationship evident between Australian sport and its use for promoting political objectives • Provides specific examples of the relationship between sport and politics 	8
<ul style="list-style-type: none"> • Identifies issues and provides points for/against Australia’s use of sport for promoting political objectives • Provides examples of politics and sport 	6–7
<ul style="list-style-type: none"> • Provide characteristics and features of Australian sport being used for political objective(s) • Provide example(s) 	4–5
<ul style="list-style-type: none"> • Sketches in general terms instances of Australia using sport for political objective(s) 	2–3
<ul style="list-style-type: none"> • Provides relevant information associated with Australian sport and politics 	1

Sample answer:

While the Olympic Games are often the biggest political example of using sport for diplomatic means, Australia has also used cricket, rugby and the Commonwealth Games in this regard. A boycott of the 1980 Moscow Olympics was strongly supported by the Australian Government but not the Australian Olympic Federation.

In the case of cricket and rugby, Australia, and many other countries, used boycotts to isolate the South African government on the international stage and to bring about an overhaul in that country's social structure.

Additionally, politicians have used their affiliation with sport as a means of promoting their wider political ambitions or agenda. Prime Ministers frequently wear Australian team tracksuits in order to convey a strong affiliation and support of those teams. This image solidifies nationalistic rhetoric in the eyes of the public.

Question 28 (b)

Criteria	Marks
<ul style="list-style-type: none"> • Makes judgements about the extent to which the media shape perceptions of women in sport • Provides examples that support the judgements being made • Provides a logical and cohesive response 	11–12
<ul style="list-style-type: none"> • Makes evident the relationship that exists between the media and perceptions of women in sport • Provides examples that support the relationship 	8–10
<ul style="list-style-type: none"> • Provides characteristics and features of the relationship that exists between the media and perceptions of women in sport • Provides examples 	5–7
<ul style="list-style-type: none"> • Sketches in general terms aspects of the media that shape our perception of women in sport • May provide example(s) 	3–4
<ul style="list-style-type: none"> • Provides relevant information on the perception of women in sport 	1–2

Sample answer:

Traditionally, from an early age males and females are socialised differently. Men are taught to play sports or watch sports by many different agents such as family, peers and schools. However, women are predominantly taught that sporting activities are mainly for men. This socialisation process is reflected directly in the media and shapes our perceptions of masculinity and femininity.

Despite the tremendous growth and popularity of women’s sports, athletes are generally still considered inferior to male athletes and compared to male athletes. There is often still an obsession with the body of female athletes rather than a focus on her athletic skills.

The media focus on hair, make-up and body shape for women but rarely, if ever, focus on the same things for men. The references to women’s physical appearance and aesthetic appeal highlight the idea that gender inequalities are commonplace within the media. Furthermore, often there is an emphasised heterosexism in the media as an important part of the hierarchal gender order, and women can excel athletically providing they are heterosexually attractive.

The extensive coverage given to former tennis star Anna Kournikova highlighted this concept. With her scantily clad figure and Eurocentric features she was the most photographed athlete at the time. Throughout the text accompanying the photographs there were numerous references to her family life, boyfriends, nightlife, rather than her skill or athletic ability. Despite Kournikova never winning a major tennis tournament she is still worth more money than any other tennis player, past or present.

Maria Sharipova is another tennis star who has garnered an immense amount of media attention because of her appearance. Sharipova has won major tournaments and is a phenomenal athlete yet the media remains focused on her body and continues to refer to her using language such as ‘beautiful young girl’, ‘soft skin’ and ‘flowing locks of hair’, all of which have nothing to do with her skills as an athlete.

Question 29 (a)

Criteria	Marks
<ul style="list-style-type: none"> • Makes the relationship evident between an athlete’s physical preparation and their prevention of injury • Provides relevant examples in a range of different sports that demonstrate the relationship between physical preparation and injury prevention 	8
<ul style="list-style-type: none"> • Identifies issues and provides points that support the physical preparation of athletes in order to prevent injury • Provides relevant examples in a range of different sports 	6–7
<ul style="list-style-type: none"> • Provides characteristics and features of how an athlete prepares physically to prevent injury in different sports • Provides example(s) 	4–5
<ul style="list-style-type: none"> • Sketches in general terms how athletes prevent injury • May provide examples 	2–3
<ul style="list-style-type: none"> • Provides some relevant information about injury prevention 	1

Sample answer:

Correct skills and techniques are needed in all sports to ensure the safety of all players. These skills and techniques should always be taught correctly in training sessions prior to competition to enhance performance and reduce injury. For example, tackling in football. All players need to learn the correct technique to tackle safely to prevent head, neck or shoulder injuries to them or their opposition. Practising the correct technique for tackling with the use of protective equipment and supervision is vital to prevent injury for the athlete and others.

When an athlete has good physical fitness they reduce the likelihood of injury. This involves a balance of both health-related and skill-related components of fitness because as the body gets tired, good skill and technique minimise the risk of injury. For example a tennis player is returning to competition after having a few months off and he runs in towards the net to return a volley. On execution he isn’t quick enough to get there, so he over-stretches and injures his shoulder.

Warm up, stretching and cool down are all important physical preparation to prevent injury. Most warm up sessions would include a combination of cardiovascular and stretching exercises to increase circulation, increase body temperature and increase the elasticity in the muscles. For example, before a basketball game an athlete will move up and down the court to increase circulation and body temperature. Keeping her body warm will prevent acute injuries and prepare the body steadily and safely. If she is a substitute she would also be encouraged to keep her body warm by continuing to run and stretch while she is waiting to join the game.

Question 29 (b)

Criteria	Marks
<ul style="list-style-type: none"> • Makes a substantiated judgement(s) about the specific needs that children and young athletes have in order to participate safely in sport • Makes evident how the specific demands need to be addressed for children and young athletes engaged in sport • Provides relevant examples that support how the demands are addressed • Provides a logical and cohesive response 	11–12
<ul style="list-style-type: none"> • Makes evident how the specific demands need to be addressed for children and young athletes engaged in sport • Provides relevant examples 	8–10
<ul style="list-style-type: none"> • Provides characteristics and features of the specific needs that children and young athletes have in order to participate safely in sport • Provides relevant examples 	5–7
<ul style="list-style-type: none"> • Sketches in general terms the needs of children and young athletes engaged in sport • May provide examples 	3–4
<ul style="list-style-type: none"> • Provides some relevant information on youth in sport 	1–2

Sample answer:

Whether children should include resistance training in their preparation for sport has been a topic for debate. Resistance training can be appropriate if undertaken with strict supervision following guidelines for safe participation. Weight-bearing exercise is most appropriate (eg push-ups, sit-ups), while a supervised program of using light weights and large numbers of repetitions may also be suitable. Care must be taken, however, to ensure progress is gradual and takes into consideration the age and size of the athlete. If these precautions are not taken then growth plates in bones may be damaged permanently, and participation in lifetime sport will be limited.

Thermoregulation is also a vital consideration when ensuring safe participation for children and young athletes. Dehydration during sporting participation can lead to heat exhaustion and impair performance. This is due to children having less metabolically efficient systems to produce sweat, and having trouble dispersing heat. They also have a greater surface area of skin in relation to adults, which means they lose heat more readily in cold environments. Ensuring children regularly rehydrate while playing and moving game times to early in the day, with multiple drink breaks, will enhance performance in hot and humid conditions. By making these adjustments to children’s participation in sport, risk of heat-related illnesses occurring is drastically reduced and children’s performance in their sport is optimised as fatigue related to heat is minimised.

The development of injuries such as shin splints and stress fractures needs to be considered by coaches of children. These types of overuse injuries may occur if a child is required to perform repetitive actions regularly, as their bones grow at a faster rate than their supporting ligaments. It is important then that in a sport like cricket, that specialisation of positions such as fast bowling does not occur too early, and bowling rates are adhered to. These measures will show that the governing body of this sport is acknowledging the health risks that can occur for young bowlers, and hence is providing a safer environment for these athletes in which to participate.

Medical conditions such as asthma, diabetes and epilepsy also need to be considered for their affect on sporting performance. Ensuring that athletes have appropriate medication and coaches have current first aid qualifications is crucial. For example, an asthmatic must have their inhaler present, and a coach must be aware of the athlete's asthma management plan, so they are aware of the triggers that may lead to an attack while participating in sport. If these measures are not put in place, then the lives of young athletes may be jeopardised when an asthma attack or epileptic seizure occurs, if supervising coaches are not equipped to correctly manage the situation.

Question 30 (a)

Criteria	Marks
<ul style="list-style-type: none"> • Makes evident the relationship between the risk of overtraining and physiological and psychological strategies for prevention • Provides relevant examples that support the relationship between prevention strategies and avoiding the risk of overtraining • Provides a logical and cohesive response 	8
<ul style="list-style-type: none"> • Recognises relationships between the causes of overtraining and strategies for prevention • Provides relevant examples 	6–7
<ul style="list-style-type: none"> • States reasons for the factors that contribute to overtraining and prevention strategies • Provides relevant examples 	4–5
<ul style="list-style-type: none"> • Sketches in general terms causes of overtraining and/or prevention strategies • May provide examples 	2–3
<ul style="list-style-type: none"> • Provides some relevant information about overtraining 	1

Sample answer:

Overtraining occurs when an athlete's training loads are too demanding and they do not sufficiently recover. Athletes can prevent overtraining occurring if they recognise the psychological and physiological effects that can occur.

When an athlete's performance is hindered by lethargy or repeated injury, it can be a sign of overtraining. An overtrained athlete may typically have an increase in musculoskeletal injuries, problems sleeping and a higher resting heart rate. These warning signs could be the result of a training program that is too high in intensity, leading to constant muscle soreness. It could also be due to the amount of training.

Athletes are able to prevent these symptoms occurring by monitoring both the intensity of the training session and the amount of training undertaken. By ensuring athletes are provided with adequate rest periods between sessions, an athlete will have more time for their body to recover, reducing muscle soreness and the chance of fatigued muscles becoming injured. Using heart rate monitors will enable them to observe their intensity levels during training, and vary activities if they become too demanding.

An athlete can also become bored with their sport, and/or lose motivation to perform at their best. This can also be a sign of overtraining. Athletes typically will lose concentration in performance, or lose their competitive drive to succeed. Other athletes may become anxious about their performance, and lack confidence in their ability to perform a skill. This can be seen with a pole-vaulter who fails to attempt heights they had previously cleared easily. Prevention of these psychological causes of overtraining can be addressed in a number of ways. By ensuring variety in training, an athlete will continue to enjoy their sport, and maintain their concentration to detail in skill execution. For example, changing training venues and training partners to reinvigorate a desire to win. By employing psychological strategies such as relaxation and mental rehearsal, an athlete will picture themselves achieving success, and ease their levels of anxiety prior to performance.

Question 30 (b)

Criteria	Marks
<ul style="list-style-type: none"> • Puts forward an argument suggesting the ethical issues associated with the use of technology in sport • Makes judgements regarding the ethics of the use of technology in affecting performance • Provides relevant examples that support their judgement 	11–12
<ul style="list-style-type: none"> • Puts forward an argument suggesting the ethical issues associated with the use of technology in sport • Provides relevant examples to support the relationship proposed 	8–10
<ul style="list-style-type: none"> • Provides characteristics and features of the use of technology in sport • Provides relevant examples 	5–7
<ul style="list-style-type: none"> • Sketches in general terms the use of technology in sport • May provide examples 	3–4
<ul style="list-style-type: none"> • Identifies some relevant information about the use of technology in sport 	1–2

Sample answer:

Technology has had a major impact on sport performance. Technology has seen improvements in equipment used in sport and the innovations implemented in training. Equipment advances have seen many sports become safer and skills easier to execute, hence improving performance. However, some advances in equipment have raised issues in sport.

Golf ball technology has seen massive changes in the last few decades. The polyurethane cover of the golf ball has been changed to enable the ball to go greater distances. The core of the golf ball has also been manipulated to cause it to spin less. What this has enabled, has been a golfer on a higher handicap being able to hit golf balls longer, and with less likelihood of hooking or slicing the ball. While this has made the game of golf more accessible to more people, as they have higher rates of success playing the sport, it does raise some questions as to whether technology has gone too far. There is an obvious reduction in skill needed to succeed at golf at a professional level. The factors such as controlling the flight of the ball in the air have lessened the need to be as skilful in this aspect of the game for a professional golfer, favouring those who have a less powerful or accurate swing, but possess a superior putting game.

Swimsuit design has also seen major change this century. The fabric used in swimsuits for the Olympics and World titles in 2008 and 2009 saw world records being slashed. This was due to the production of fabrics that made swimmers more buoyant, creating less drag in the water, and ultimately increasing the speed of the swimmer. This became a real issue as certain countries were signed with different swimsuit designers, which limited the suit they were able to compete in, hence affecting the performance they could create in the suit they wore. This was the case for the Australian swim team who raced in the Speedo Lazer swimsuit, which was the first super suit. Adidas then produced a superior suit, which only became available to countries that had the finances to afford it. Hence, swimmers from poorer countries, or those who were not sponsored by the company with the best produce, were disadvantaged, which created an unfair playing field. Ultimately FINA stepped in to make guidelines all countries had to abide by in regard to what they swim competitively in. This was a direct result of the influence of the suit creating so many new world records, and questions being raised regarding the legitimacy of these records being created by the best athletes, or by the best equipment available. Swimming performances are now back to being a fair competition whereby the best performer wins, and not necessarily the performer from the team with the best equipment.

Training innovations have also had an enormous impact on sport and performance. Technologies such as lactate threshold testing and biomechanical analysis have enabled coaches to become better informed about their athlete's ability. Lactate threshold testing monitors when and for how long an athlete can sustain their performance aerobically before they start to fatigue from lactate. This is crucial information for team sports such as rugby league, where interchange is limited and maximising each player's effort can be determined from this data being collected in training. It also enables trainers to ensure that they are monitoring the health of their players and not pushing them beyond their limits, hence improving the safety of their players.

Question 31 (a)

Criteria	Marks
<ul style="list-style-type: none"> • Makes evident the relationship between of enabling, mediating and advocating actions and the sustainable improvement of the health of disadvantaged groups • Provides detailed examples that demonstrate the relationship between these actions and disadvantaged groups 	8
<ul style="list-style-type: none"> • Provides details of the enabling, mediating and advocating actions that are used to improve the health of disadvantaged groups • Provides examples of when these actions have provided sustainable improvements for disadvantaged groups 	6–7
<ul style="list-style-type: none"> • Provides characteristics and features of the actions that improve the health of disadvantaged groups • Provides examples 	4–5
<ul style="list-style-type: none"> • Sketches in general term action(s) that improve the health of a disadvantaged group(s) • May provide examples 	2–3
<ul style="list-style-type: none"> • Provides relevant information regarding an enabling, mediating or advocating action 	1

Sample answer:

Individuals need to feel that they have control over the cultural, social and economic factors that affect their health. ‘Enabling individuals’ is about forming a partnership with individuals or groups to empower them in creating a supportive environment, developing strong life skills, ability to access resources and self-empower individuals to make better health choices. For example, using ATSI people in health promotion campaigns and advertisements around the harmful effects of tobacco smoking. This promotes lifestyle changes that are long term and beneficial as people are able to relate to the promotion and link it into lifestyle and culture and situations.

All sectors need to work together, mediating to bring about consensus and reconciling the different individuals, communities and sectors to promote health. With all sectors working together the decisions for health promotion and health policies will reflect a greater empathy with disadvantaged groups and local needs because they take into account different social, cultural and economic conditions. For example the ATSI Close the Gap campaign collaborates with communities to increase the number of ATSI people seeking medical attention.

Advocating is a combination of individual and social actions designed to speak up for specific groups, and gain political commitment and policy support for particular health goals or programs. For example, many migrants that don’t speak English may be unaware of the health services available to them to improve their health outcomes. These groups therefore require advocates to promote their concerns. The advocates could be religious leaders, tribal leaders, advisors or councillors.

Question 31 (b)

Criteria	Marks
<ul style="list-style-type: none"> • Makes a judgement of how effective government funding is in improving the health status of Australians • Provides details on the nature of government funding in relation to addressing the health status of Australians • Provides relevant examples to support the judgement • Provides a logical and cohesive response 	11–12
<ul style="list-style-type: none"> • Makes evident the relationship between government funding and the health status of Australians • Provides points relevant to the nature of government funding in Australia • Provides examples that support the relationship that exists 	8–10
<ul style="list-style-type: none"> • Provides characteristics and features of government funding and the nature of health status in Australia • Provides relevant examples 	5–7
<ul style="list-style-type: none"> • Sketches in general terms government funding strategies and/or the wider implication on the health status of Australians • May provide examples 	3–4
<ul style="list-style-type: none"> • Provides relevant information about government funding of Australian health 	1–2

Sample answer:

State governments are the main providers of public access to health services that include public hospitals, public health services and home and community care. The NSW Government will spend approximately \$20.6 billion on health this year and this money was allocated around the state based on the number of people living in a particular area, priority health issues and specific health needs of a community. Money can help cure sick people by allowing them to use the public health system to visit a doctor or hospital. This is effective because it leads to higher life expectancy and decreased mortality rates in Australia.

However, it is not that simple. Hospitals and doctors can help treat sick people but they cannot achieve their health potential until they are able to take control of the areas that influence their health. If we use an example, a 40-year-old male who doesn't speak English, is a heavy drinker, a regular smoker, is physically inactive and who recently had an emergency heart-bypass operation. It was a success and he returned home, however he continued smoking, drinking and did not engage in any exercise. The funding to assist this surgery resulted in him still being alive, but how long will this last before he needs another operation or loses his life? He needs to be educated on a healthy lifestyle because people need knowledge and skills to live a healthier life and funding alone cannot solve health inequities.

It is known that funding is provided for specific populations in Australia. The unemployed, people with a disability and the aged are entitled to an allowance from the Department of Human Services to enable them to satisfy their basic needs. This can be effective in improving their health status as they are able to buy clothes, food and shelter. Federal funding has also been allocated to improve healthcare for Indigenous communities in remote areas of Australia. Yet, the aged, the unemployed, people with a disability and Indigenous communities are population groups in our society still experiencing health inequities.

To minimise health inequities, funding alone cannot help. People who are from disadvantaged communities need empowerment. This can be done through services responding to the

priorities identified by the relevant community. This gains the trust and respect of disadvantaged communities. To be effective the service needs to ensure their approach is sustainable and effective in engaging socially excluded groups in health. An example could be when the doctors at the local Medical Centre notice a lot of their patients experiencing poor mental health. They organise a free monthly fun run to promote physical activity and increase social interaction. Everyone is encouraged to attend because they modify the event for the aged (they can volunteer or take a shorter track), the disabled (it is wheelchair and visually impaired friendly) and the unemployed (as it is free). This attempts to solve health inequities by empowering disadvantaged groups in the community.

The government provides funding to services where there is limited resources but this is often done through prioritising where the money is best spent. For example, if you visit a public hospital and have a broken arm you are often waiting a very long time because more serious injuries are seen first. Or in rural areas there are limited services such as hospitals and medical centres. Therefore the local council tries to attract doctors and nurses to their community by financially supporting their salary, travel and accommodation. This is an effective initiative for those disadvantaged groups living in rural and remote locations.

2017 HSC Personal Development, Health and Physical Education Mapping Grid

Section I Part A

Question	Marks	Content	Syllabus outcomes
1	1	Types of training	H8, H10
2	1	Health care in Australia	H5
3	1	Anxiety and arousal	H11
4	1	Groups experiencing inequalities	H2, H3
5	1	Preventable chronic disease	H1
6	1	Motivation	H11
7	1	Energy systems	H7
8	1	Health care in Australia	H5
9	1	Learning environments	H9
10	1	Prioritising health issues	H1
11	1	Assessment of skill and performance	H9
12	1	Measuring health status	H2
13	1	Assessment of skill and performance	H9
14	1	Health care in Australia	H1, H14
15	1	Recovery strategies	H11
16	1	Ottawa Charter	H4
17	1	Learning environments	H9
18	1	Measuring health status	H2
19	1	Supplementation	H11
20	1	Preventable chronic diseases	H2, H3

Section I Part B

Question	Marks	Content	Syllabus outcomes
21 (a)	3	Epidemiology	H1
21 (b)	4	Epidemiology	H1
22	5	Preventable chronic disease	H2
23	8	Growing and ageing population	H15
24	5	Supplementation	H11
25	7	Energy systems	H7
26	8	Physiological adaptations in relation to principles of training	H7, H10

Section II

Question	Marks	Content	Syllabus outcomes
27 (a)	8	Major health issues that impact young people	H2

Question	Marks	Content	Syllabus outcomes
27 (b)	12	Actions targeting health issues relevant to young people	H14
28 (a)	8	Political purpose of sport	H12
28 (b)	12	Media and women in sport	H12, H16
29 (a)	8	Physical preparation	H8, H13
29 (b)	12	Children and young athletes	H13, H17
30 (a)	8	Risks of overtraining	H8, H17
30 (b)	12	Ethical issues associated with the use of technology	H8
31 (a)	8	Factors that can create health inequities	H3
31 (b)	12	Funding to improve health	H5