

# **L3 Lead Examiner Report 1901**

January 2019

**L3 Qualification in Sport and  
Exercise Science**

**Unit 13: Nutrition for Sport  
and Exercise Performance  
(31824H)**

## Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications come from Pearson, the world's leading learning company. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications website at <http://qualifications.pearson.com/en/home.html> for our BTEC qualifications.

Alternatively, you can get in touch with us using the details on our contact us page at <http://qualifications.pearson.com/en/contact-us.html>

If you have any subject specific questions about this specification that require the help of a subject specialist, you can speak directly to the subject team at Pearson. Their contact details can be found on this link:

<http://qualifications.pearson.com/en/support/support-for-you/teachers.html>

You can also use our online Ask the Expert service at <https://www.edexcelonline.com>

You will need an Edexcel Online username and password to access this service.

### **Pearson: helping people progress, everywhere**

Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your learners at: [www.pearson.com/uk](http://www.pearson.com/uk)

January 2019

Publications Code 31824H\_1901\_ER

All the material in this publication is copyright

© Pearson Education Ltd 2019



## Grade Boundaries

### What is a grade boundary?

A grade boundary is where we set the level of achievement required to obtain a certain grade for the externally assessed unit. We set grade boundaries for each grade, at Distinction, Merit and Pass.

### Setting grade boundaries

When we set grade boundaries, we look at the performance of every learner who took the external assessment. When we can see the full picture of performance, our experts are then able to decide where best to place the grade boundaries – this means that they decide what the lowest possible mark is for a particular grade.

When our experts set the grade boundaries, they make sure that learners receive grades which reflect their ability. Awarding grade boundaries is conducted to ensure learners achieve the grade they deserve to achieve, irrespective of variation in the external assessment.

### Variations in external assessments

Each external assessment we set asks different questions and may assess different parts of the unit content outlined in the specification. It would be unfair to learners if we set the same grade boundaries for each assessment, because then it would not take accessibility into account.

Grade boundaries for this, and all other papers, are on the website via this link:

<http://qualifications.pearson.com/en/support/support-topics/results-certification/grade-boundaries.html>

### 31815H – Unit 13: Nutrition for Sport and Exercise Performance (31824H)

Grade	Unclassified	Level 3			
		N	P	M	D
Boundary Mark	0	18	25	32	40

## Introduction

This was the fourth series of the new specification and the first time that the assessment had no prerelease materials. The method of external assessment was by a task based approach. The number of learners that sat this external assessment was higher than January 2018.

The question paper followed the same format in relation to the questions, client nutritional programme and client details. As the paper had no prerelease materials and research notes were not permitted in the summative assessment, a nutritional principles booklet was provided. This booklet provided information on the food group for some foods in the nutritional programme that learners may not be familiar with. In addition, the kcals for 1 g of each macronutrient were provided, the Harris Benedict equation for BMR And activity factor levels. Lastly, the BMI calculation was provided. This was to support learners so that they did not have to recall specific information to support them with mathematical related interpretations of the nutritional programme and client details. This also allows for foods included in the nutritional programme to have variety over each series without disadvantaging learners that are not familiar with all of the foods in the programme. The summative assessment time frame was increased by 30 minutes compared to previous series to allow learners additional time to carry out analysis and calculations on the information provided in the nutritional programme and client details.

## Introduction to the Overall Performance of the Unit

It should be noted that for this series, the standard of learner evidence was much higher than January 2018 series. Most learners were able to provide detailed interpretations of the nutritional programme and compare g of food consumed or even better, percentage of calorie intake for each macronutrient rather than relying on quantities related to the eat well plate, the latter of which was used widely in previous series and does not provide sufficient evidence for a detailed interpretation of nutritional intake.

There was a wide spread of marks, learners were able to achieve marks across all grade bands. The scripts showed that learners could organise their time to complete the initial analysis of the nutritional programme and carry out further related calculations and then go on to answer each question.

## Individual Questions

### Activity 1

In this activity learners had to interpret the nutritional programme for Matt in relation to her health and well being.

Good responses provided nutritional analysis of the percentage of macro nutrients consumed on a daily basis and compare these to recommended amounts.

The table below shows the type of analysis learners could have carried out during the planning stages in the additional s of information learners could esearch after having received part A.

Day	Total Cals	CHO %	CHO g	Fat %	Fat g	Protein %	Protein g	Activity
Monday	1540	39	150	35	60	26	100	
Tuesday	1420	39	140	38	60	23	80	
Wednesday	1620	44	180	33	60	23	90	
Thursday	1490	43	160	30	50	27	100	
Friday	1040	46	120	35	40	19	50	
Saturday	2010	44	220	40	90	16	80	
Sunday	2030	51	260	31	70	18	90	

The client was eating less calories than required on a daily basis so analysis of grams would have provided some relevant interpretations of macronutrient intake such as carbohydrate intake being too low. Many learners had incorrectly assessed the fat intake as they had used 4 kcals per gram rather than 9 kcals as shown in the nutritional principles booklet.

This analysis clearly shows that carbohydrate intake is too low, fat intake is too high and protein intake varies across the week but is usually too high.

There were limited links to health and wellbeing which is the focus for the first question. Where learners did relate this to health and wellbeing it was usually related to eating too much fat and a link to Coronary heart disease or high blood

pressure. Some learners were able to discuss in detail the health link related to eating high fat foods causing blockage of the coronary arteries and linking this to CHD which was good knowledge. In a number of cases learners linked drinking cola as being high fat options which is incorrect as the high simple carbohydrate content is the main nutritional concern.

Some learners were able to make the link of having cola and fruit juices to being simple carbohydrates and providing a quick burst of energy followed by fatigue. Some also linked having too many simple carbohydrates to potentially suffering from diabetes and were able to discuss the insulin response from intakes of high levels of simple carbohydrates.

Many learners were able to note that the client had high levels of fruit and vegetables in their diet, however, few were able to make the link to health and wellbeing in relation to providing high levels of fibre to reduce the potential for suffering from constipation or the long term impact of helping to prevent bowel cancer. Other interpretations related to micronutrients include appropriate calcium intake for bone health. Very few learners identified potential concerns with no red meat being consumed or other foods that are high in iron and the potential health concern with anemia.

The other key aspect of the diet was the low calorie intake related to BMR and BMR adjusted for activity levels.

It is expected that further interpretation of the client information should be included in the interpretation of the food intake including:

- Body Mass index which was 18.1 and therefore classed just in the underweight category .
- BIA was at 7% which is classed as lean.  
It was therefore expected that learners would be able to make the link to the fact the person must very low body fat and be underweight using a combination of BMI and BIA scores.
- Basal metabolic rate could then be worked out using the Harris Benedict equation to work out the calorie intake for the person based on their specific details:

$$\text{BMR} = 66.5 + 880 + 940.6 - 256.7 = 1629.8 \text{ kcals without activity levels}$$

$$\text{BMR} = 66.5 + 880 + 940.6 - 256.7 \times 1.55 = 2526.19 \text{ kcals with activity levels}$$

Responses that were rounded up or down were credited.

From this information, learners should have been able to interpret that energy intake is below BMR plus activity levels so the person would start to lose body weight if they continued to eat and exercise as per the nutritional programme and also not have sufficient energy to be able to take part in daily activities as well as all the physical activity.

Fluid intake was referred to by many learners in relation to recommended daily amounts and types of fluids consumed, many learners stated that the client was not drinking enough water and was also having too much caffeine. Links with caffeine and potential negative effects on health and wellbeing such as insomnia were made by a number of learners.

Lastly, the factors affecting digestion and absorption of nutrients and fluids should have been commented on in relation to the nutritional programme for the individual with some reference to the timings of food intake and activity levels and timings of the individual

**This response was awarded 20 marks out of 20**

1 Interpret Matt's current nutritional programme in relation to nutritional intake for health and wellbeing.

Use the nutritional principles information sheet to support your answer.

Your answer will focus on the following points:

- (a) food intake
- (b) fluid intake
- (c) factors affecting digestion and absorption of nutrients and fluids.

(20)

currently matt is eating between 1040-2030 calories in a day. His BMR predicts he should eat around 1624 ~~4~~ calories a day. This means that matt is ~~pre~~ within target of his BMR and is eating enough calories a day. However, the Harris Benedict equation can make it more specific depending on activity levels. Matt is moderately active so therefore, you multiply his BMR by 1.55. This brings matt's calorific goal to 2517 calories a day which clearly he isn't reaching. BMR stands for basal metabolic rate and it ~~is~~ <sup>the rate at which</sup> ~~is~~ <sup>body uses energy while resting</sup> a way of predicting how many calories someone should eat in a day based off of gender, weight, height and age. ~~Matt's BMI is 18.1, this could be~~ BMI is body mass index and it is a way of predicting if someone is



overweight or underweight or about right for their ~~at~~ height and weight. Matt's BMI is 18.1 ~~at~~ which means he is slightly underweight. This could link to his caloric intake because he isn't eating enough and doing a moderate amount of exercise. However, this can be good for Matt as a lighter body weight makes it easier for his long cycling events.

RDA stands for recommended daily allowance, ~~the average~~ Matt eats 260g of carbohydrates on a Sunday. The RDA for Matt says he should eat around 576g meaning Matt isn't consuming enough carbohydrates. <sup>Carbohydrates are</sup> ~~the~~ <sup>is</sup> important for Matt because <sup>they</sup> ~~carbohydrates~~ are a source of long lasting energy. Polysaccharides are the main carbohydrates for long lasting energy, found in foods like pasta, rice, <sup>and</sup> potatoes. Polysaccharides have a complex structure meaning they take longer to digest with a slow breakdown. Because of the slow breakdown energy is released slowly and there is longer lasting energy.

The RDA for Matt's protein intake is 83g, most

days Matt eats about ~~80g~~ <sup>80-100g</sup> of protein. This means Matt is ~~not~~ eating ~~enough~~ <sup>the right amount of</sup> protein. Protein is a ~~backup~~ source of energy, it regulates metabolism and helps with the growth and formation of body tissues. <sup>However,</sup> Matt mainly eats incomplete protein, he doesn't get all 8 essential amino acids in one food.

Matt eats 90g of fat <sup>on a Saturday</sup> and his RDA recommends 64g. Matt is eating too much fat. If he eats too much regularly it can lead to many health problems like <sup>high cholesterol,</sup> heart disease, diabetes or obesity. However there are 2 types of fat, saturated (meat, dairy) and unsaturated. Matt doesn't eat much meat or dairy therefore he mainly consumes unsaturated fats. Unsaturated fats are harder to breakdown/digest but they are a good source of backup energy. Matt doesn't want to carry a heavier body weight because the lighter he is the easier it is for his long distance cycling.

On average Matt drinks 15 litres of water a day. A moderately active person should be drinking at least 2.5, especially on training/event days. By not drinking enough Matt could

become dehydrated and ~~also~~ have symptoms like, nausea, cramps, irritability or decreased performance. Matt drinks a lot of fizzy drinks which can be absorbed quickly to get short sudden bursts of energy. However the food pyramid recommends that you have a little amount of sugar in a week. He also drinks a lot of caffeine, which again gives you quick energy. ~~but this is good~~

Glycemic index is the rate of absorption. Matt consumes a lot of rice, yoghurt, milk, bananas and apples. This means he has a low CHO, where foods slowly enter the blood stream because it takes longer to absorb/digest. Low CHO is good for recovery but is also a sustainable energy source to have prior a performance, which is good for his long distance.

It is ~~import~~ important for endurance cyclists like Matt to consume lots of vitamin D and calcium, they work together to help produce strong bones and teeth. Matt needs to have strong bones as a lot of pressure is put on them to constantly work ~~for the~~ <sup>in</sup> the events/training. Vitamin D can be found in foods like egg yolk and fish / fish oils which Matt

doesn't consume a lot of. The RDA for vitamin D is 10mg which Matt ~~probably~~ isn't getting. A deficiency of vitamin D is brittle bones which could result in time off of cycling. The RDA for calcium is 700mg but can also be found in food like yoghurt, which Matt does consume a lot of. Therefore he is ~~is~~ consuming enough calcium to prevent brittle bones. ~~but~~

Overall, Matt consumes too little vitamin D, water and carbohydrates. He consumes the right amount of calcium and protein. ~~He~~ Finally, he consumes too much caffeine, fizzy drinks and protein.

This response has identified the BMR and also the BMR with activity levels included and related this to the average calorie intake per day. They have also calculated the BMI and provided the correct category and again, linked this to the calorie intake and BMR to explain that he is not eating sufficient calories per day.

This learner has provided the RDA of g of each macronutrient and compared these to RDAs which in this assessment is a valid approach to interpretation as well as percentage of each macronutrient as the client not eating sufficient calories per day. Carbohydrate intake is related this to the highest quantity consumed in the week and made a correct judgment that he is not eating sufficient amounts of carbohydrate. There follows discussion on the function of carbohydrates and the types of carbohydrates and sources in the client's diet. Some assessment is provided related to the breakdown of the two types of carbohydrate and speed at which energy is released.

The same interpretation process has been repeated for protein and fat in relation to comparing quantities consumed to RDAs as well as demonstrating a good understanding of the function of each macronutrient and sources in the diet. In addition, knowledge of incomplete proteins has been demonstrated in relation to the clients meat free diet.

Concerns related to health and wellbeing have been provided in relation to excess fat consumption.

Fluid intake has been interpreted and the quantity the client consumes compared to RDA going on to discuss the health and wellbeing concerns related to dehydration.

Absorption of foods has been discussed in relation to Glycaemic index , however, the benefits are related to sports performance rather than health and wellbeing.

Specific micronutrients have been referenced with links to health and wellbeing, and relevant sources of foods that contain vitamin D and calcium have been included in the discussion.

**This response was awarded 8 marks out of 20**

- 1 Interpret Matt's current nutritional programme in relation to nutritional intake for health and wellbeing.

Use the nutritional principles information sheet to support your answer.

Your answer will focus on the following points:

- (a) food intake
- (b) fluid intake
- (c) factors affecting digestion and absorption of nutrients and fluids.

(20)

Food Intake:

During Matt's nutritional programme, it shows many different positives and negatives towards his diet. Food intake is a big part of an endurance cyclist's event phase.

Firstly, it is shown that Matt is healthy in regards to some of the foods that he eats, such as his fruits and vegetables. This is due to him having fruit smoothies, fruit juices, and eating fruits through-out the day. The nutritional programme shows that he has approximately 4 to 5 of his fruit and veg a day, which is good due to him meeting the daily requirements set by the government.

Although Matt is ~~to~~ eating below the Recommended Daily allowance and this is due to him eating below the recommended amount of calories ~~a week~~, for everyday of the week. This has led to Matt consuming the lower amount of carbs daily due to his diet being protein based. <sup>this is because his a pescatarian</sup> Due to Matt eating below the RDA, he is classed as underweight due to his BMI being at 18.1. Matt's BMR is 2526.8 due to him being moderately active. This shows that he is ~~not~~ eating less than 800 ~~cal~~ (approximately) calories than he should be.

From Matt's nutritional programme I can see that he is consuming more protein than he should be, This is due to him consuming around 30g more of Protein (varies on different days). Matt is consuming more than the required amount of fish than he should be a week, and is consuming many different types of proteins such as Broad and kidney beans.

Matt's carbohydrate intake is under the amount he should be consuming daily and this is due to him eating too much protein. ~~During the event phase he should be~~ ~~Matt~~ Matt however, is consuming different types of complex carbohydrates such as brown bread and rolls, this is good due to ~~the~~ fibre being able to store more energy.

\*  
↳ most of his events are after lunch and he is not consuming the right amount of energy to participate in 30km cycles.

Fluid Intake:

Matt participates in long distant cycling which means he will have to stay hydrated. Due to this he should drink over the 2 litre RDA of water, although Matt is only consuming between 1 litre - 1.5L a day of water. This is due to him ~~drinking too much~~ <sup>drinking too many</sup> caffeine drinks such as cola and coffee.

Matt is consuming his sugar intakes by drinking cola and coffee due to him being on a healthy, but not balanced diet.

By drinking on average 3 coffees a day and 2 cans of cola this will not help him during the event phase - he will become dehydrated. ~~Most of his events are~~ ~~after lunch~~ ~~and~~ he is not eating enough



\* Matt is consuming many different types of grains, such as crackers, rice cakes, pitta and naan bread. which are all good stores of carbohydrates.

→  
Matt is also consuming too much dairy and cheese, ~~and~~ all of these are high in fat.

Factors affecting digestion and absorption of nutrients and fluids.

Matt does not have water balance and this is due to him not consuming enough fluids - (such as water and fruit juice) than he is releasing through sweat and expiration of breath.

Matt's energy intake is low compared to his energy usage and this is ~~because~~ shows that he is losing weight rather than maintaining it. Matt does not have a balanced diet and this could be due to him being a vegetarian. he does not consume the right amount of carbohydrates for an endurance event.

I believe Matt has not consumed enough Carbs for the energy required to be a long distant Cyclist. Due to this he will need to Carb load for the energy required.

The learner has identified that the client has a low-calorie intake and a low carbohydrate intake but no RDA for carbohydrates has been provided and no assessment of current quantities of carbohydrate other than they are too low. BMI and BMR values have been calculated and linked to a calorie intake deficit.

Protein intake has been discussed with approximate values of how much more protein is being consumed than RDA and has identified sources of protein in the diet.

There is a discussion on the different types of carbohydrate but no links to absorption or digestion. The learner has incorrectly identified fibre as providing energy.

Fluid intake has been accurately interpreted with RDA values provided. Cola has been linked to high sugar intake. Coffee has been linked to causing dehydration, but this is not specifically stated in the response.

Fat intake is covered in relation to dairy, but this is very brief. The last few paragraphs are mainly a repeat of information already provided.

Very few links to health and wellbeing and limited assessment of macronutrient intake.

## Activity 2

Nutritional strategies are provided in the unit content in learning Aim D. It is therefore expected that learners will select appropriate strategies for the client based on their event and their current nutritional intake.

Many learners did not perform as well in this activity as they did in activity one. This is due to the fact greater application is required for this activity in relation to addressing the concerns identified in activity one, where, how and why this diet can be modified and how this will be beneficial to improve sporting performance for the clients specific sport.

For this activity, learners needed to focus on long distance cycling which is an aerobic endurance sport. The client was under consuming carbohydrate in their usual diet compared to RDA as well as requiring higher levels due to their sport. Some learners provided approximate grams of carbohydrate that should be consumed for an endurance athlete with ranges shown below:

moderate =7g per kg	$64 \times 7 = 448\text{g}$
moderate to heavy 10g per kg	$64 \times 10 = 640 \text{ g}$

As the client also takes part in a great deal of sport and physical activity, strategies related to increasing carbohydrate intake would gain credit. Strategies related to carbohydrate loading would also gain credit as this is for continuous endurance events lasting 90 minutes or over which is appropriate for this client and their event.

As the nutritional programme showed that the client was under consuming kcal each day and was classed as underweight, strategies to increase calorie intake would also be appropriate.

As protein intake was varied across the week, some credit could be given to increasing protein intake on days where protein intake was low using figures similar to those shown below in relation to g of protein consumed per kg body weight..

Endurance athlete 1.2-1.6 g protein per kg  
 = 76.8 – 102.4 g per day

As well as using protein supplements after training to repair muscle fibres.

In addition, fat intake was high in relation to macronutrient intake, so strategies to reduce fat intake would also gain credit.

Fluid intake should be increased with reasoning linked to sport such as providing fluid to produce sweat used for thermoregulation.

Any justification of the modifications related to health and wellbeing were not credit worthy unless there were additional links to the effect on sporting performance.

Some learners did struggle with this question provided daily modifications to improve the client's diet rather than summaries of overall modifications across the diet. The daily modifications often concentrated on increasing carbohydrate intake with some link to cycling, however, this was often linked to just increasing energy stores rather than specifically linking to glycogen storage. Many learners did include reducing fat intake such as having low fat yogurt rather than full fat yogurt.

Some learners did provide calculations to carbohydrate intake based on the type of sport the client took part in. Supplements were often suggested such as sports drinks and energy gels to increase carbohydrate intake. Beetroot juice was also included by some learners, but many were not able to make the link as to how this would improve aerobic endurance/cycling performance.

Good responses provided appropriate modifications which were supported with reasoning for each modification related to the clients sporting event.

**This response was awarded 17 marks out of 20**

2 Modify the nutritional programme, based on nutritional strategies, in relation to Matt's sports event.

Use the nutritional principles information sheet to support your answer.

Your answer will focus on the following points:

- (a) modifications that are relevant to the sporting event
- (b) justifying the modifications
- (c) the impact of factors affecting digestion and absorption of nutrients and fluids.

(20)

My first recommendation for Matt is a supplement, Beetroot juice. I recommend that Matt drinks 250 ~~ml~~ ml of beetroot juice per day. This is because beetroot juice helps with vaso dilation. Vaso dilation is where blood vessels in the working muscles expand; this allows more blood to flow to these muscles, meaning more oxygen and nutrients will be delivered to the working muscles. The oxygen will be used to break down lactate in the blood and to replace waste  $\text{CO}_2$  via gaseous exchange. Beetroot juice will allow Matt to perform for longer. Also, beetroot juice acts as an anti-oxidant. Anti-oxidants get rid of any toxins in the blood such as alcohol or drugs, this will also improve performance.

My second recommendation for Matt is that he should eat a higher percentage of polysaccharides. At the moment Matt is only eating 50-55% complex carbs. Because of Matt's event, endurance cycling, he will need to eat more around 65-70% polysaccharides.

This is because complex carbs will be the main source of energy that he uses during his event, the polysaccharides take around 3-4 hours to break down and to fill your glycogen stores, so Matt will want to eat polysaccharides at least 3 hours before training or his event. Some examples of polysaccharides are things like pasta or potatoes. However, Matt should try to eat wholemeal pasta because it has a lower glycaemic index (GI) so it will cause his blood sugar levels to rise less dramatically which decreases his chance of type 2 diabetes.

My third recommendation is to do with his fluid intake, ~~currently~~ Currently Matt is drinking large amounts of cola and coffee, these drinks are both high in caffeine. Caffeine acts as a diuretic meaning that the body will urinate more and this could lead to dehydration. As a replacement for these I would recommend a sports drink, these act as a fluid replacement as well as containing carbohydrates. There are 3 types of sports drinks hypertonic, hypotonic and isotonic. Hypertonic contain a large amount of carbs but do not replace much fluid. Hypotonic contain a fairly small amount of carbs but replace fluids better than the hypertonic drinks. For Isotonic drinks contain a moderate amount of carbs and are also useful for fluid replacement. The carbs in the drinks get in the blood ~~via~~ via diffusion.

This is where the carbohydrate molecules move from high concentration to low. The carb molecules are in high concentration in the drink and low in the blood. The type of sport drink that I would personally ~~recom~~ recommend for Matt is an isotonic sports drink. This is because it will supply Matt with carbohydrates that will fill his glycogen stores and supply him with energy for training. As well as ensuring that he doesn't become dehydrated. And his performance tests don't drop

My next recommendation, for Matt, is to increase his general calorie consumption. At this point in time Matt is in a calorie deficit, this means that he is burning more calories than he is consuming and this will result in him losing weight. If Matt continues to lose weight, it could result in him becoming severely underweight and this will cause him health problems because some of his bodily functions may ~~not~~ not work properly. For example a lack of body fat will affect his thermoregulation. His current Baso metabolic rate is 1630 calories per day, this is how many calories that matt needs to function properly. Currently Matt is only eating ~~from 1400 cals 1600 cals~~ per day. I would ~~recomend~~ that he on average 1.600 cals per day. So, I would recommend ~~that~~ that he increases his daily calorie intake by 50 cals each day to ensure

that he isn't eat causing massive spikes in his glycogen levels in his blood. This will mean that he will no longer be in a calorie deficit and will become stronger and his overall performance will improve.

My final recommendation for Matt is a strategy that he should use, this is ~~eat~~ carb loading. Carb loading is where you deplete your glycogen stores by tapering your training while eating minimal complex carbs (Polysaccharides). Tapering is where you gradually reduce your training to fully deplete your glycogen stores. Because your stores of glycogen there are two different carb loading methods, 1 day or 4 day. 1 day is where you deplete your glycogen stores over 24 hours and 4 day is where you deplete them over 4 days. After the tapering of training and depleting your glycogen stores, then you should eat a meal high in complex carbohydrates, for example pasta or potatoes. Your body then fills your glycogen stores to the maximum to over compensate for them being depleted. This then allows them to last for longer during an event. For Matt, I would recommend the 4 day process because this will allow more time to taper training and to deplete glycogen stores. This will mean that Matt can perform for longer.



This learner has recommended beetroot juice as a supplement and provided accurate and detailed knowledge as to how this improves aerobic sports performance in relation to vasodilation of blood vessels.

An increase in carbohydrates has been recommended, with polysaccharides as the main source of carbohydrate that should be increased. The percentage information provided is not correct (50-55%), the increase recommended is also a little high at 65-70%.

The discussion linked to complex carbohydrates producing energy for the event with reference to digestion and absorption and filling glycogen stores shows good knowledge and application to the sporting event. The learner has also provided additional information related to glycemic index and how eating whole meal pasta will prevent peaks in blood glucose.

Fluid intake modifications have been provided with reasoning related to caffeine being a diuretic with an explanation of what this means. Suitable modifications have been provided which are linked to sporting performance. The full range of sports drinks are discussed with the advantages and disadvantages of each covered in relation to hydration and carbohydrate replacement.

An increase in calorie intake is recommended with reasoning as to why this has been suggested but this is linked mainly to health and wellbeing rather than sporting performance. Only 50 kcals a day increase has been recommended with no nutritional advice as to how this could be carried out by the client in relation to modifying their diet.

Lastly, carbohydrate loading has been covered with both the nutritional and exercise regime included with reasoning as to what is happening to glycogen stores over the loading period.

**This response was awarded 5 marks out of 20 marks.**

- 2 Modify the nutritional programme, based on nutritional strategies, in relation to Matt's sports event.

Use the nutritional principles information sheet to support your answer.

Your answer will focus on the following points:

- (a) modifications that are relevant to the sporting event
- (b) justifying the modifications
- (c) the impact of factors affecting digestion and absorption of nutrients and fluids.

(20)

There are many modifications that can help Matt for his cycling event. In his food intake ~~can~~ <sup>he can</sup> change many things that could help him a lot more for the cycling event. For example Matt could have more carbohydrates ~~etc~~ here than protein because especially complex carbohydrate as they are stored <sup>longer to make to more</sup> longer <sup>sucrose</sup> than simple carbohydrate and release ~~carb~~ complex carbohydrate release more energy. Having more pasta, noodles, bread etc would benefit ~~no~~ Matt because he is doing a endurance event. Simple carbohydrates like sports drinks, energy drinks and energy gels are released quicker than complex carbohydrate.

On Thursday, Matt had 160g of Carbohydrate which equals to 640kcal, also had 50g worth of fat which equal to 450kcal and lastly had 100g of protein which equals to ~~450kcal~~ 400kcal. All together he had 1490kcal which is low for a male because the aim for males is 2500kcal per day and because ~~mate~~ Matt is doing an endurance event he needs more Carbohydrate than fat and protein.

With Matt's fluid intake he could change coffee with more water because endurance events requires more water than before because he could become ~~not dehydrated~~ ~~with~~ whilst his ~~training~~ training.

~~Water balance~~ Having a good water balance would help with<sup>his</sup> digestion more than ~~his~~ having 3 cups of coffee per day which would a

Negative effect on him.

Matt should replace his Smoothies with cereal because they provide more nutrients ~~and~~ than having something and the nutrients could help Matt with his event.

An increase carbohydrate intake has been identified with some links to releasing energy and recommended foods have been provided to increase carbohydrate intake. The reference to sports drinks and energy gels 'releasing quicker' is very vague but appears to be an attempt to differentiate the faster break down and release of energy for simple carbohydrate and complex carbohydrates. However, as the learner did not state this, there is no credit given for this part of the response.

The calculations related to kcals for consumed for each macronutrient on Thursday is related to question one – however, they have correctly identified that the client needs more carbohydrate compared to fat and protein.

Fluid intake has been referenced with a modification suggested to swap coffee for water, however the link to sports performance is not credit worthy as reasons as to why dehydration could affect sports performance are required for this question.

The last part of the response gains no credit as replacing a smoothie with a cereal bar as it provides more nutrients is much too vague and depending upon which cereal bar and which nutrients the learner is referring to this recommendation could be incorrect.

### Activity 3

The phase of the event is 'after the event'. The learner's response should focus on the following key areas:

#### Nutritional guidance after event

- Replace depleted glycogen stores
- Replace fluids lost through sweating
- Intake protein to help with muscle repair

#### Types of food to be consumed and timings:

- During first two hours body is able to convert CHO into glycogen at a very fast rate – golden window.
- 50-75 g of high or moderate GI carbohydrates (1-1.2g per kg body weight) in first 15 mins then 50-75 g of CHO every 2 hours
- **Types of food and fluids**
  - Isotonic drinks, hypertonic and hypotonic drinks
  - Energy bars or gels
  - Protein and protein supplements to help with muscle repair.
  - Foods with high GI eg jelly babies, jaffa cakes, haribo
  - Complex carbohydrates

Very few learners were aware of the golden window which is a key concept in the after event phase to ensure glycogen stores are fully replete. Many learners were aware of the benefits of simple carbohydrates and were able to name different types and discuss the fast energy release from fast breakdown and absorption.

There was some confusion about what glycogen stores were, with some learners recommending that the client should consume foods that were high in glycogen which was incorrect and demonstrated a lack of understanding of what glycogen is.

Good responses included a range of foods and fluids with timings and quantities of how much should be consumed with reasoning related to absorption and digestion as well as potential benefits to sporting performance.

**This response was awarded 8 marks out of 10 marks.**

**3 Recommend nutritional guidance for Matt based on his phase of training.**

The phase of training is 'after event'.

Your answer will focus on the following points:

- (a) links to the phase of training
- (b) impact of factors affecting digestion and absorption of nutrients and fluids.

(10)

After Matt's Event, he should eat complex carbohydrate, also known as polysaccharides. Foods that contain high amounts of this are things like pasta, potatoes and starchy foods. It is important to eat polysaccharides after an event to replenish his glycogen stores. These will be depleted because this is what Matt's body will use as a source of energy for his event. He should eat these polysaccharides within the 'Golden hour'. This is the hour directly after the event where the body naturally absorbs more of the nutrients in the food that he eats.

Also, after training Matt should try and eat 30g of protein. This protein ensures that Matt's muscles will repair ~~quickly~~ properly and grow bigger and stronger. It's important that he doesn't eat more than 30g of protein in one serving because the body can only absorb 30g at one time. The excess protein will be broken down into fat, this takes around 8-12 hours. Protein can be found in foods like poultry, red meat and dairy products. You can also get protein from shakes/bars.

These are good because they supply the body with complete proteins. These are proteins that provide all of the different types of protein to help your muscles and to help the body function. Finally, Matt should also consume this protein in the 'Golden hour' straight after training to ensure he gets all the nutrients from the proteins.

Lastly, after training Matt should make sure that he replaces the fluids and electrolytes that he lost while exercising. He should drink water to replace his fluids to prevent dehydration. And also he should drink a hypotonic sports drink to ~~ref~~ replenish some of his glycogen stores and to replace his fluids.

The type of carbohydrates has been identified with appropriate sources named with reasoning linked to replenishing glycogen stores. Golden hour has been referenced with a brief description as to why it is important but further information that includes quantities and timings of carbohydrate would have gained further credit.

Protein intake has been discussed with reasoning linked to benefits for future sporting performance. Quantities that should be consumed have been identified with links to digestion and absorption. Reference to complete proteins has been included but further information related to how these contain the essential amino acids has not been included.

Lastly, fluid intake has been discussed with links to water for hydration. Hypotonic drinks have been named incorrect as being able to replenish glycogen stores, isotonic or hypertonic drinks are more appropriate for sufficient levels of carbohydrate to replenish carbohydrate stores.

**This response was awarded 0 out of 10 marks**

A nutritional strategy that could be appropriate for Alex is Carb loading. Carb loading is used to ~~the~~ increase the ~~new~~ muscles capacity to store glycogen above normal level. It is useful for events lasting up to 90 mins. The amount of glycogen stored is related to carbs eaten in diet and the level of intensity in training/competition. Carb loading would be useful to Alex as <sup>in</sup> his competition he will play four 20 minute games and one 20 minute game for the final and carbohydrates are used for energy. In addition from Alex's ~~nutritional~~ ~~nutrition~~ nutritional programme he doesn't meet his RDA for carbohydrates.

The first area of his overall diet to modify is his breakfast. Alex's breakfast is very repetitive everyday he has the same thing, frosted cereal, wholemeal bagel with chocolate spread and full fat milk. A high amount of fats are ~~consume~~ consumed in his breakfast. Butter is a saturated fat as it is generally sold at room temperature. Alex could replace this butter with a reduced fat butter. He can also replace the full fat milk ~~with~~ with skimmed milk. In his breakfast he should try to include more carbohydrates ~~to replace the~~ as he trains

This response discusses a nutritional strategy that should be used before an event rather than after an event so no credit can be given. The second part of the response covers modifications of the diet which is not relevant in question 3 as this is addressed in question 2.

Some learners did discuss other phases of the event in their response but only sections that were relevant to the 'after the event' phase was able to gain any credit.



## Summary

Learners are encouraged to:

- Read and analyse the nutritional programme in relation to macro nutrient content. Percentage intake for each macronutrient should be assessed in relation to RDAs.
- Expect to carry out calculations in relation to BMI and BMR of the client and use this information in the activities to justify the interpretation of nutritional programme and modifications.
- When answering questions refer to the nutritional programme and individual as much as possible and make sure that the content you refer to is actually in the case study.
- Ensure only the correct phase of the event is discussed in question 3, any other phases that are covered that are not asked about in the question will not gain credit.
- Use the assessment criteria in the mark scheme for each activity to guide them and ensure they cover all the content needed for each activity.

For more information on Pearson qualifications, please visit

<http://qualifications.pearson.com/en/home.html>

Pearson Education Limited. Registered company number 872828  
with its registered office at Edinburgh Gate, Harlow, Essex CM20 2JE

