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Examiners' Report/  
Lead Examiner Feedback  
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BTEC Level 3 Nationals in Sport and  
Exercise Science  
Unit 13: Nutrition for Sport and Exercise  
Performance (31824H)



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## 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, Pass and Near 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://www.edexcel.com/iwantto/Pages/grade-boundaries.aspx>

### Nutrition for Sport and Exercise Performance: Unit 13

Grade	Unclassified	Level 3			
		N	P	M	D
Boundary Mark	0	18	25	32	39

# Introduction

This was the first series of the new specification, and therefore, the first time that this unit has been externally assessed. The method of external assessment was by a task based approach.

It was clear from the learner's responses that centres have prepared their learners exceptionally well for this external assessment and should be commended for their ability to so quickly adapt to the assessment mode. Learner's responses were generally well prepared and coherent in relation to many aspects of the specification.

The question paper followed the format identified in the sample assessment material with a nutritional programme provided as part A and then part B contained unseen information regarding the client details, their sport and the phase of the event that they were in. There are three activities based on the part A and part B information each of which is marked using a levels based approach, where the overall quality of the response is considered rather than identifying individual marking points.

## Introduction to the Overall Performance of the Unit

This was the first time that learners had undertaken this type of assessment and the responses provided showed a range in attainment. The scripts showed that learners could organise their time to assess the information provided in the part B and then provide structured and coherent answers in the two and half hours of allocated time.

# Individual Questions

## Activity 1

In this activity learners had to interpret the nutritional programme for Brian in relation to his 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:

This information was then related to the client details which included levels of detail such as:

- Body Mass Index  $BMI = 64/3.24 = 19.7$  and compared to the normal range
- BIA = 9% compared to the normal range
- The client's Basal Metabolic rate in relation to activity levels using the Harris-Benedict equation.

The balance of food groups (grains, fruit and vegetables, protein, dairy, fats and sweets) was discussed by some learners in relation to the nutritional analysis and/ or the Food pyramid and/or the Eatwell plate.

The impact of food preparation on the nutritional composition of food was also discussed in relation to macronutrient content and impact on health. Fluid intake was referred to in relation to recommended daily amounts and types of fluids consumed by Brian.

As the focus of this question was on health and wellbeing, learners who did well in this activity did include information how Brian's health and wellbeing could have been affected from his nutritional programme.

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

Learner's responses gained marks in one of the four mark bands:

Mark band 1: 1-5 marks

Mark band 2: 6-10 marks

Mark band 3: 11-15 marks

Mark band 4: 16-20 marks

This response was placed in Band 3 and awarded 14 marks out of 20

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

(20) 14 Act 1

Brian's BMI rests at about 1.97 suggesting ~~his~~ he is underweight but this could just be down to the fact he is training for a marathon. His BMR is 1684.92 but then because of his high activity level he should be consuming around 2906 kcal.

The RDA for of carbs for a normal person is ~~is~~ between 225 and 325g. ~~is~~ For most of the week he is consuming ~~this amount~~ within this amount everyday. However on ~~a~~ Sunday he is ~~too~~ consuming ~~a~~ over this amount which isn't good considering ~~to~~ its his rest day.

The RDA ~~is~~ of fat is 70g. On ~~most~~ <sup>some</sup> ~~of the~~ days when he is training he is ~~also~~ consuming below the RDA. On the other days and especially on the two rest days he is consuming a lot more than the RDA.

The RDA ~~is~~ of protein is between 46 and 56g. Every day - including rest days Brian is consuming way over what is recommended and this is bad especially on the rest days because if the protein isn't being used then its just going to get stored as fat.

Carbs: carbs take up around 50-60% of caloric

intake. They help to supply energy for the body to function and they have to be broken down during digestion to become glucose. Every day Brian consumes either bread, pasta or potatoes - these are all forms of carbohydrates and help to provide energy.

Fats: fats should take up around 30% of calorie intake as they also supply energy to the body. Most fats come from animal sources which ~~the~~ he consumes every day. Other fats come from things such as Pot Noodle, chocolate cake, chocolate bars, ~~and~~ ice cream <sup>and</sup> crisps. These things make the diet a lot less healthy.

Protein: protein should make up around 10-20% of calorie intake depending on the exercise. Protein helps to ~~rebuild~~ rebuild, repair and provide fuel. Things such as chicken, eggs, salmon, milk and protein bars - which he consumes one of these things everyday help to repair his body after exercising.

Fluid: it is recommended that someone drinks 2.5-3 litres a day. This helps to regulate body temperature and avoid dehydration. Brian drinks both isotonic and hypertonic sports drinks everyday. Isotonic help to rehydrate and are most likely consumed during exercise. Hypertonic supply more energy and are most likely consumed during or after Brian's ~~activity~~ exercise.

Digestion is the breaking down of food into individual nutrients. Fluids that contain low levels of sugar and fruit are absorbed quicker. We can see that on ~~the~~ Monday ~~from~~ Brian drinks two glasses of fruit juice but we don't know when and this could have an effect on his exercise. Blood flow is directed to the stomach after eating.



however if exercising, the bloodflow is redirected to the working muscles. This can then cause stomach cramps or sickness. On each day ~~the~~ Brian has spaced out his exercise and meals well ~~having~~ meaning any food should be digested by the time he exercises. Brian has used multiple preparation methods when making up his meals. He has used processed, baking, frying, and roasting. Most of these methods are the ~~un~~ unhealthy options: Both frying and roasting add fat, processed foods have been changed and had salt added to it (ham) but baking (pasta bake) doesn't add any ~~fat~~ and ~~is~~<sup>is</sup> the healthiest option he ~~could~~ has chosen.

On Brian's nutritional programme he has good and bad days. One of the good days would be Saturday. He is however over the ~~the~~ recommended calorie intake but on the other hand he does a 35km run. This is ~~quite~~ quite a long distance and therefore is going to need a lot of energy to keep going. This high calorie intake would ~~mean~~ give him that energy he ~~needs~~ needs. One of Brian's bad days would be Sunday. He eats way over the recommended calorie intake and then doesn't do any ~~a~~ exercise. This would be especially bad if the marathon was then on the Monday because he has consumed all



these fatty foods and then won't have a chance to work it all off before the event.

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The response includes correct BMR calculations with additional calorie intake related to activity levels. However, an incorrect BMI figure has been presented, it should be 19.7 rather than 1.97 so the decimal point appears to have been placed incorrectly.

The learner has provided a good analysis of the recommended daily amounts of each macronutrient and compared that to the quantities consumed in the nutritional programme. Fluid intake has been analysed and the types of drink consumed accurately discussed in relation to their nutritional benefits.

The response however does not provide any analysis in terms of the impact of the diet on the client's health and wellbeing. This means that the learner has not been able to achieve marks in the highest mark band and this response has been awarded 14 marks.

This response was placed in Band 2 and awarded 8 marks out of 20

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

(20) 8 Act1

Brian's nutritional programme is suited to his ~~sport~~<sup>event</sup> but changes can still be made to be able to enhance his performance.

Brian's BMI works out to 19.1, but it doesn't take into account muscle, <sup>although</sup> ~~but~~ his event doesn't require much muscle as it is an endurance event. The ~~amount~~ amount of calories burnt at rest (BMR) is 1684.92 and while exercising it would need to burn 2906.487.

Brian's worse day is Sunday. He takes in a high amount of protein and fats but doesn't do any exercise, with fats this can cause the effect of adding on weight as fat ~~is~~ will not be turned into energy. The fluids that ~~Brian~~ he drinks is sports drinks. It doesn't specify which one he has drunk but there is 3 types: hypertonic, hypotonic and isotonic. Hypertonic is consumed after a work out as it can give a boost of energy. <sup>but is poor hydration.</sup> Isotonic is preferred for

Long distance runners as it replace fluids lost through sweating and gives a boost of energy. Another bad thing about Friday is the way food is prepared, he has fried <sup>and roasted</sup> the food meaning that the food has additional fat added to it.

Throughout Brian's diet he seems to be ~~BE~~ drinking the right amount of water meaning that he is very well hydrated. If this wasn't the case dehydration would occur meaning that blood plasmas could be lost affecting the blood flow.

Brian since he ~~is heavy~~ ~~is~~ does a lot of exercise it would mean that his carbohydrate intake must be **512**.

he doesn't hit this requirement for any of the days. This could mean that he lacks energy when it comes to the event. as a long distance runner would need lots of energy to run the full distance.

This response only achieved 8 out of 20 marks. Whilst there is good analysis at the start of the response in relation to calorie intake and BMR for the client, the level of analysis of macronutrient intake is very limited in relation to stating that the client has consumed high quantities of protein and fat on Sunday and insufficient carbohydrate intake throughout the week, which is correct. Accurate impacts to health are identified, including the effect of food preparation on the nutritional composition of foods.

The response is focused and does have some relevance to the requirements of health and wellbeing for this client, however, as the response is relatively brief it does not contain sufficient depth of analysis to move outside of grade band 2.

## Activity 2

For this activity, learners needed to focus on the marathon event and the nutritional demands required for an endurance event as well as any nutritional strategies that could be used to support achievement in running a marathon.

On the whole, learners did struggle with this question and many provided daily modifications to improve the client's diet for health and well being rather than concentrating on modifications that were specific to the clients sporting event.

Learners were expected to discuss the nutritional programme in relation to carbohydrate intake to take into account the RDA for an endurance athlete - moderate to heavy/heavy = 8 – 10 g per kg which would work out at 512 - 640 g per day for Brian.

Nutritional strategies are provided in the unit content in learning Aim D. It is therefore expected that learners will select an appropriate strategy for the client based on their event. In this assessment, carbohydrate loading/glycogen loading would be expected to be included in the learner's response in relation to types of foods consumed, quantity and timings of intake including tapering activity levels prior to the event in order to maximise glycogen loading. Very few learners did actually discuss this in any detail and many if they did include this strategy just provided an outline as to what the regime involved.

Good responses to this question did include supplements to support nutritional strategies for a marathon runner such as energy gels, glucose tablets or sports drinks for carbohydrate and electrolyte replacement. Some learners did also comment on the caffeine intake relating this to mobilization of fatty acids as a fuel source which was good. Very few learners discussed beetroot juice or vitamin supplements as supplements to support a marathon runner which would have gained credit based on the clients nutritional programme and sporting event.

Learner's responses gained marks in one of the four mark bands:

Mark band 1: 1-5 marks

Mark band 2: 6-10 marks

Mark band 3: 11-15 marks

Mark band 4: 16-20 marks

To gain marks in mark band 4 the response had to include information on nutritional strategies rather than just modification of the nutritional programme to increase carbohydrate intake as the activity clearly states that the modification of the programme needs to be based on nutritional strategies in relation to the individuals sports event.

This response was placed in Band 3 and awarded 19 marks out of 20

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

(20) 19 Act 2

Brian is training for a marathon which is around 26 ~~miles~~ miles long. For him to be able to run the entire distance he needs to change some things in his diet. First of all he needs to decide on better preparation methods; instead of roasting or frying he could try grilling or ~~steaming~~ steaming as most of the fat gets removed. So far ~~Brian~~ Brian isn't getting his 5-a-day and should ~~to~~ change the chocolate cake <sup>and the crisps</sup> and the chocolate bars to an apple or an orange. Brian should next consider some nutritional strategies, these could be something like carbo-loading. This strategy allows the athlete to maximise his carb stores prior to the event. If Brian was to do this then he should begin it ~~for~~ four days before the event. Brian already uses a lot of protein bars in his diet and so should avoid increasing his protein intake because if he then can't use up the extra protein it will get stored as fat which will then have a negative effect on his performance in the marathon. A marathon runner that wants to get a quick time would need to be quite light and so weight loss may be a strategy Brian could try. Although his BIA is already very low (9%) so it wouldn't necessarily be recommended.

Brian could also try some supplements. He already consumes a lot of tea and sports drinks which have caffeine in. The caffeine  $\downarrow$  enhances endurance - which is perfect for a marathon runner; it also increases alertness which is ideal for at the start of the race and it also improves mobilisation of fatty acids so fat can be used for energy. ~~Brian could consume some healthy meat and fish as these contain creatine~~ Brian could consume ~~less~~ little bit less meat and fish as these contain creatine which increases muscle mass which <sup>then</sup> leads to weight gain and this would hinder his performance. He could add in some energy gels which could be used before he exercises as these are mostly used by endurance athletes to spare glycogen stores. They are high in carbs but also low in protein and fat meaning they are easy to consume and don't effect the sports person in a more negative way. Another supplement that Brian could use could be beetroot juice. Beetroot juice improves aerobic endurance which means he will find it easier to continue running throughout the entire marathon. It also causes vasodilation at the working muscles which increases the bloodflow, increases the oxygen ~~and~~ getting to your muscles and increases the ~~nutrient~~ amount of nutrients getting to the working muscles.

When training is concerned, Brian could change when in the mornings he trains and when he eats breakfast. Most mornings he trains at around 5:30 am or 6 am



and then doesn't have breakfast until 8 or 9 am. Because he is training <sup>2</sup> before consuming any foods he is practically running on empty. His energy stores would most likely be delapidated ~~mean~~ and he won't be able to run as efficiently. Because of this, I would suggest he <sup>switches</sup> ~~switches~~ them around: Wake up early and have breakfast and then once his breakfast is fully digested, ~~the~~ he can then go out on his run.

The response is entirely relevant to the individual's sporting event and the justifications for the modifications are all related to marathon running performance. The response includes a high level of detail on supplements for endurance running with a good range of supplements discussed. However, the information relating to carbohydrate loading is limited in places – more depth in this section of the response would have provided sufficient knowledge and understanding to gain full marks for this activity.

Some cows cows and some more carbohydrates based food like rice, wheat and pasta for his slow releasing energy.

1ct2

The changes I will make to Brian's dinners are to replace the pizza, ice cream, battered fish and chips to healthier options like red meat foods for iron, vegetables such as carrots and asparagus ~~broccoli~~ broccoli, beetroot and parsnips as these will reduce the amount of fats that Brian has in his body which will help his performance in his event.

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for the body, could also change the milk to semi-skimmed as it has not been specified, change the corn-flakes to bran-flakes and just completely get rid of the scrambled egg on toast and change it to strawberries, blueberries and 2 slices of brown-bread toast.

Lunch I would change the pot noodle and chocolate cake to grilled ~~salmon~~ salmon, pasta and ~~asparagus~~ asparagus because the salmon and pasta both sources of protein and carbohydrates which ~~the~~ brain needs and the asparagus is ~~an~~ a vegetable that ~~is~~ Brian needs. I will also add to his menu as an addition

This response was placed in Band 1 and received 5 marks out of 20.

The response concentrates on how to improve the nutritional programme for health and wellbeing rather than related to the clients sporting event and therefore can only be placed in mark band 1. To gain marks in higher grade bands the response has to demonstrate some relevant to the individuals sporting event.

## Activity 3

In Activity 3, learners had to focus on Part B of the case study and recommend nutritional guidance for the individual in relation to the individual based on the phase of the event that the individual is taking part in.

The phase of the event is stated as 'pre-event'. This did result in some mixed responses as the timeframes for pre-event are not stated in the unit content. Therefore, responses related to pre-event timelines being up to a week before the event, or on the day of the event, were given credit.

The part of the specification that this activity relates to is D3 – Nutritional intake during different phases of the event and related to the following content:

- Types of food to be consumed and timings:
- Fluid intake
- Supplements where appropriate.

For a marathon the key areas learners were expected to write about included:

- Ensuring glycogen stores are well stocked, ensure blood glucose levels are stable, ensure the body is well hydrated
- Types of food to be consumed and timings for on the day of the event were:
- 3-4 hours Low Glycemic Index foods and high carbohydrate content meal prior to the event 150-300g (3-4 g per kg body weight)
- High Glycemic carbohydrate snack 60-30 mins prior to competition (70g CHO)
- Fluid intake to ensure the individual was fully hydrated and supplements that could have been used in clued caffeine, energy gels, glucose tablets and beetroot juice

Responses related to carbohydrate loading were also given credit but had to include the timings of food intake, types of food and carbohydrate quantity to be discussed to still meet the area of the specification being assessed.

Learner's responses gained marks in one of the four mark bands:

Grade band 1: 1-3 marks

Grade band 2: 4-7 marks

Grade band 3: 8-10 marks

This response was placed in Band 3 and received 8 marks out of 10

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

(10) 8 Act3

Brian is in the pre event phase of training and so in order for him to prepare for the marathon he needs to keep in mind his stores and timings.

So around 2-3 hours before his event he needs to ensure that his glycogen levels are well stocked; if not then he isn't going to be able to keep going through the whole marathon. If ~~glyco~~ glycogen levels are low then he could consume some pasta - but he ~~must~~ must give this time to digest otherwise it is going to cause stomach & cramps.

He must then check he is well hydrated - if he isn't then he won't be able to regulate his body temperature meaning he won't be able to sweat and therefore meaning he will get ~~dehydrated~~ dehydrated a lot quicker. To avoid this Brian could drink a lot of water and energy drinks ~~before~~ beforehand. This then means he will be hydrated for the marathon but then his blood glucose levels will also be stable and ready to produce the energy he needs to run the marathon. He should definitely avoid any fat or protein because they take too long to digest, meaning if ~~they~~ <sup>he</sup> ~~were~~ <sup>was</sup> to consume something high in

protein or fat then a few minutes  $\pm$  into the marathon then he would get stomach cramps and could possibly be sick meaning he cannot continue with the race. With his nutritional programme in mind, he should attempt to not consume the protein bars before the marathon and even before any training. Around 3-4 hours before the event he should consume a meal that is high in carbohydrates; this will also help to restore his glycogen levels. Finally another way for him to stay hydrated would be to sip water in the two hours before the event - this will help to avoid dehydration but also help to avoid hyperhydration which is where you take on too much fluid.

The response includes timings and types of foods but no reference to glycemic index is made. The response does however include information on factors affecting digestion and absorption in relation to types of foods that should be eaten and when. Fluids and hydration is covered in detail as well as the impact of being dehydrated for a marathon runner which shows specific relevant to the individuals sporting event.

This response was in mark band 1 and gained 3 out of 10 marks

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

(10) 3 Act3

Brian has only one week before the marathon so he needs to make sure he has enough energy for the run, to do this he needs to consume mostly carbohydrates in large quantities so that his energy stores can keep on increasing and that he doesn't use it all in training, Brian will also need to eat more protein because he will be resting more before the ~~run~~ marathon and the protein will repair his muscles and will help reduce the chance of injury. Also he will have to drink lots of water and isotonic drinks because he will need to be well hydrated and stock up on carbs because he will lose a lot of fluids during the ~~run~~ run and



he will feel more exhausted  
if he is dehydrated and won't  
be able to run as far.

The response demonstrates limited relevance to the pre-event phase of training with just reference to having enough energy and relating this to carbohydrate intake. No reference to factors affecting digestion or absorption are included in the response either.

# Summary

Based on their performance on this paper, learners should:

- Read and analyse the nutritional programme in relation to macronutrient content.
- Research any foods that they are not familiar with to find out the nutritional content and how food preparation may affect the nutritional composition of foods.
- Be prepared to carry out calculations in part B 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
- Use the assessment criteria in the mark scheme for each activity to guide you and ensure you cover all the content needed for each activity.
- Please click [here](#) for the specification and SAMS

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