Level 3 Personal Trainer - Applying the Principles of Nutrition To A Physical Activity Programme

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Course Start Date	02/12/2020
Course Location	EDUCATE FITNESS
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Statement of Achievement

Assessor, by signing this statement of unit achievement you are confirming that all learning outcomes, criteria and range statements have been achieved under specified conditions and that the evidence gathered is authentic.

This statement of unit achievement table must be completed prior to claiming certification.

Section	Pass/Refer	Assessor Full Name	Assessor Signature
Understand the principles of nutrition and key guidelines to nutrition			
Understand nationally recognised practices to providing nutritional advice			
Understand the relationship between nutrition and physical activity			
Understand how to collect nutrition information and how to use it			
Understand the principles of nutritional goal setting, how to collect and analyse			
Be able to apply the principles of nutrition to a physical activity programme			

Learner Name	MARC WHITESIDE	IQA Name	
Learned Signature	Marc Whiteside	IQA Signature	
Date	08/10/2021	Date	

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L/600/9054 Applying the Principles of Nutrition to a Physical Activity Programme

The workbook

Purpose

The purpose of this workbook is to support you, the learner, as you gather and record evidence.

Content

The workbook covers all of the criteria required to achieve this unit. You may choose to complete some or all of the tasks listed. If you choose not to complete this workbook, or only complete some of the tasks, other supporting evidence **must** be submitted to your assessor to show that all the assessment criteria in this unit have been fully achieved.

Assessor

Your assessor will also support you to complete the workbook. He or she will discuss the workbook with you and answer any questions you may have on what you need to do. The assessor will make sure that you fully understand what you will need to learn in order to record your answers in your workbook.

For this unit especially, each learning outcome - or just some of the learning outcomes - could be covered by having a discussion with your assessor. That discussion could be voice recorded, or your assessor could write a report on the discussion. This is a useful alternative to writing all your answers.

If you and your assessor decide to do this, you can prepare for any discussions by using the boxes to write bullet point notes as a reminder.

What you need to do:

1. You may want to add additional pages as required or use the blank pages at the back of the workbook for any notes or to complete questions where you run out of space. Please ensure that you have signed and dated every attachment before submission.

2. When you are ready to submit your work, please complete the unit sign off form on **page 44** with the details required.

You are now ready to start completing your workbook.

Good Luck!

Title:	**L/600/9054 Applying the principles of nutrition to a physical activity programme**
Level:	**3**
Credit Value:	**6**
GLH:	**40**
Learning Outcomes **The learner will:**	**Assessment Criteria** **The learner can:**
1. Understand the principles of nutrition	1.1 Describe the structure and function of the digestive system 1.2 Explain the meaning of key nutritional terms including: • diet • healthy eating • nutrition • balanced diet 1.3 Describe the function and metabolism of: • macro nutrients • micro nutrients 1.4 Explain the main food groups and the nutrients they contribute to the diet 1.5 Identify the calorific value of nutrients 1.6 Explain the common terminology used in nutrition including: • UK dietary reference values (DRV) • recommended daily allowance (RDA) • recommended daily intake (RDI) • glycaemic index 1.7 Interpret food labelling information 1.8 Explain the significance of healthy food preparation 1.9 Explain the relationship between nutrition, physical activity, body composition and health including: • links to disease / disease risk factors • cholesterol • types of fat in the diet

2. Understand key guidelines in relation to nutrition	2.1 Identify the range of professionals and professional bodies involved in the area of nutrition 2.2 Explain key healthy eating advice that underpins a healthy diet 2.3 Describe the nutritional principles and key features of the National food model/guide 2.4 Define portion sizes in the context of the National food model/guide 2.5 Explain how to access reliable sources of nutritional information 2.6 Distinguish between evidence-based knowledge versus the unsubstantiated marketing claims of suppliers
3. Understand nationally recommended practice in relation to providing nutritional advice	3.1 Explain professional role boundaries with regard to offering nutritional advice to clients 3.2 Explain the importance of communicating health risks associated with weight loss fads and popular diets to clients 3.3 Evaluate the potential heath and performance implications of severe energy restriction, weight loss and weight gain 3.4 Identify clients at risk of nutritional deficiencies 3.5 Explain how cultural and religious dietary practices can influence nutritional advice 3.6 Describe safety, effectiveness and contraindications relating to protein and vitamin supplementation 3.7 Explain why detailed or complex dietary analysis that incorporates major dietary change should always be referred to a Registered Dietician

4. Understand the relationship between nutrition and physical activity	4.1 Define the role of carbohydrate, fat and protein as fuels for aerobic and anaerobic energy production 4.2 Explain the components of energy expenditure and the energy balance equation 4.3 Explain how to calculate an estimate of Basal Metabolic Rate (BMR) 4.4 Explain how to estimate energy requirements based on physical activity levels and other relevant factors 4.5 Identify energy expenditure for different physical activities 4.6 Evaluate the nutritional requirements and hydration needs of clients engaged in physical activity
5. Understand how to collect information relating to nutrition	5.1 Explain why it is important to obtain clients' informed consent before collecting nutritional information 5.2 Describe the information that needs to be collected to offer nutritional advice to clients 5.3 Explain the legal and ethical implications of collecting nutritional information 5.4 Describe different formats for recording nutritional information 5.5 Explain why confidentiality is important when collecting nutritional information 5.6 Describe issues that may be sensitive when collecting nutritional information 5.7 Explain different methods that can be used to measure body composition and health risk in relation to weight
6. Understand how to use nutritional information	6.1 Describe basic dietary assessment methods 6.2 Explain how to analyse and interpret collected information so that clients' needs and nutritional goals can be identified with reference to the National food model/guide recommendations 6.3 Describe how to interpret information gained from methods used to assess body composition and health risk in relation to weight

	6.4 Explain how to sensitively divulge collected information and 'results' to clients 6.5 Explain how to recognise the signs and symptoms of disordered eating and healthy eating patterns 6.6 Describe the key features of the industry guidance note on 'Managing users with suspected eating disorders' 6.7 Explain the circumstances in which a client should be recommended to visit their GP about the possibility of referral to a Registered Dietician
7. Understand the principles of nutritional goal setting with clients	7.1 Explain how to apply the principles of goal setting when offering nutritional advice 7.2 Explain how to translate nutritional goals into basic healthy eating advice that reflects current National guidelines 7.3 Explain when people other than the client should be involved in nutritional goal setting 7.4 Define which other people could be involved in nutritional goal setting 7.5 Identify the barriers which may prevent clients achieving their nutritional goals 7.6 Explain how to apply basic motivational strategies to encourage healthy eating and prevent non-compliance or relapse 7.7 Explain the need for reappraisal of clients' body composition and other relevant health parameters at agreed stages of the programme
8. Be able to collect and analyse nutritional information	8.1 Collect information needed to provide clients with appropriate healthy eating advice 8.2 Record information about clients and their nutritional goals in an approved format 8.3 Analyse collected information including nutritional needs and preferences in

	relation to the clients current status and nutritional goals
9. Be able to apply the principles of nutrition to a physical activity programme	9.1 Access and make use of credible sources of educational information and advice in establishing nutritional goals with clients 9.2 Design and agree nutritional goals that are compatible with the analysis, accepted good practice and national guidelines 9.3 Ensure that the nutritional goals support and integrate with other programme components 9.4 Agree review points with the clients 9.5 Review the clients understanding of how to follow the nutritional advice as part of their physical activity programme 9.6 Monitor, evaluate and review the clients' progress towards their nutritional goals
Additional information about this unit N/A	
Unit aim (s)	This unit covers the learner's ability to apply the principles of nutrition to support client goals as part of an exercise and physical activity programme.
Assessment requirements specified by a sector or regulatory body (if appropriate)	Refer to Level 3 Personal Training Assessment Strategy developed by SkillsActive
Details of the relationship of the unit and relevant national occupational standards	Instructing Physical Activity and Exercise 2009 NOS D462 Apply the principles of nutrition to support client goals as part of an exercise and physical activity programme

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1. This question is in two parts

a) Describe the structure of the different components of the digestive system.

(AC1.1)

Component	Description of structure
Mouth	The Mouth is the start of the ailmentary canal, and the Mouth, teeth and tongue are the main structures of the mouth.
Oesophagus	A Muscular tube connecting the mouth to the stomach.
Stomach	The stomach is a large muscular sac 15-25cm long, it has sphincters at each end that regulate food entry and speed of gastric emptying, and it leads to the small intestine.
Small intestine	It is a 5m (17ft) long tube which connects to the large intestine, and it is divided into 3 sections- duodenum, jejunum and ilium.
Large intestine (colon)	It has a larger diameter tube than the small intestine tube which follows on from the small intestine.
Rectum	This is the final part of the ailmentary canal.
Liver	This is the largest organ in the body after the skin, and is located on the right hand sidse of the abdominal cavity.
Pancreas	The pancreas is an elongated, tapered organ located across the back of the abdomen, behind the stomach. The right side of the organ, called the head, is the widest part of the organ.

b) Describe the functions of the different components of the digestive system.

(AC1.1)

Component	Description of function
Mouth	Food is moistened with saliva, then the enzyme salivary amylase starts a chemical breakdown of starchy carbs into simpilar sugars. Chewing(mastication) is where food is torn/ground by the teeth, then the tongue rolls the food into small balls that are easy to swallow.
Oesophagus	Its function is Peristalsis which is the rythimical waves of muscle contraction which help food along the ailmentary canal.
Stomach	The stomach's function is the introduction of hydrochloric acid which breaks down food into a liquid 'chyme', then digestive enzymes start to break down nutrients, for example pepsin breaks down proteins, Small moecules such as water, alcohol and some medicines can be absorbed into blood.
Small intestine	This is the main site for absorption of nutrients, the nutrients are then absorbed into the blood, there are also more digestive enzymes break down nutrients, for example bile emulsifies fats to aid with digestion.
Large intestine (colon)	Its function is the partial breakdown of soluble fibre (cellulose), and re-absorption of remaining water from undigested food.
Rectum	Waste (faesces) is passed from colon to rectum and then expelled from the body.
Liver	The liver filters the blood coming from the digestive tract, before passing it on to the body. It breaks down (detoxifies) and builds up many biological molecules, it also stores fat soluable vitamins and iron, and makes bile that emulsifies lipids (fats).
Pancreas	Its function is producing pancreatic juice which is secreted into the small intestine. It secretes 1.5L of pancreatic juice a day.

2. Explain the given terms.

(AC1.2)

Term	Definition
Diet	Diet is the food and drink consumed routinely by an individual.
Healthy eating	Healthy eating means consuming nutrient-dense foods in the right quantities from all the food groups.
Nutrition	Nutrition is a simple concept: the body needs a range of compounds in various quantities in order to function, which must be ingested. Too much or too little of any of these nutrient compounds has the potential to cause negative effects.
Balanced diet	A balanced diet is one that gives your body the nutrients it needs to function correctly.

3. This question is in two parts.

a) Describe the functions of macronutrients and micronutrients.

Macronutrients	Main functions
Proteins	The main functions of proteins are its required for growth, repair of cells and a wide range of metabolic processes. This essential nutrient is also important for the body to function healthily during pregnancy.
Fats	The main functions of fats are that it provides a cushion to help protect our vital organs from damage. It acts as an insulator, helping us to maintain the correct body temperature. It enables our bodies to process vitamins A, D, E and K, which are all fat-soluble and vital to good health. And it contains essential fatty acids which help the heart and immune system.
Carbohydrates	The main function of Carbohydrates are that they are the most important source of energy for the body providing four calories per gram. Once broken down in the digestive system, carbohydrates become glucose, which is the simplest of sugars, which in turn is transported in the blood to wherever energy is required.
Micronutrients	**Main functions**
Vitamin, mineral and antioxidants	The main function of vitamins is that they are essential for us to grow and for metabolism. The main function of Minerals are that they are used by the body as vital components of bodily liquids and tissues, and they make up the enzyme process. They are also needed for every day nerve function. The main function of antioxidants are to restrict the potential erosion that can happen as a consequence of oxygen-fuelled responses (like ageing and structural erosion). The body does this by using the antioxidant enzymes which are made by the body within cells. Food that we regularly eat are also a source of dietary antioxidants.

b) Describe the metabolism of macronutrients and micronutrients.

(AC1.3)

Macronutrients	Metabolism
Proteins	Proteins metabolic processes, either at the cellular, organ or organism state, can be classified as anabolic or as catabolic. Anabolism- These are a group of metabolic routes that build molecules from smaller ones. The reactions that these produce need energy (for example protein synthesis and photosynthesis). The process is sometimes described as a construction process in the body, As proteins make up such a major part of most cells, sufficient protein consumption is vital to preserve physical well-being and productivity. Catabolism- These are a group of metabolic routes that factor down molecules into smaller ones while releasing energy. Amid processes like respiration and digestion, larger-sized molecules like polysaccharides, fatty acids, nucleic acids and proteins are fragmented into smaller sized elements such as monosaccharides, nucleotides and amino acids. Protein is required for a wide range of metabolic processes. It can be used to provide a source of energy providing four calories per gram.
Fats	Fat is a concentrated source of energy (nine calories per gram) which the body can use to produce glucose although this is a far more complex process than for even complex carbohydrates and so will only occur when usable protein or carbohydrate supplies are exhausted.
Carbohydrates	Carbohydrates are the most important source of energy for the body providing four calories per gram. Carbohydrates metabolic process of once broken down in the digestive system, carbohydrates become glucose, which is the simplest of sugars, which in turn is transported in the blood to wherever energy is required.
Micronutrients	**Metabolism**
Vitamin, mineral and antioxidants	Vitamins are a body of carbon-filled organic compounds. These are essential for metabolism. The body needs some minerals in higher amounts and some in lower amounts, it also uses minerals supplied in food more effectively than minerals consumed as supplements. The metabolism process is when the body is using the antioxidant enzymes which are made by the body within cells, and food that we regularly eat that are also a source of dietary antioxidants.

4. Give the calorific value (per g) of the given dietary components.

(AC1.5)

Dietary component	Kcal/g
Fats	Nine calories (per g)
Proteins	Four calories (per g)
Carbohydrates	Four calories (per g), Alcohol seven calories (per g)
Alcohol	

5. Explain the given terms.

(AC1.6)

Term	Explanation
UK dietary reference values (DRV)	The UK dietary reference values (DRV) are a group of approximate calculations detailing the amount of energy and nutrients required for different types of healthy people across the UK.
Recommended daily allowance (RDA)	Recommended daily allowance (RDA) also known as Guideline Daily Amounts (GDAs), was replaced with Reference intakes (RI), or recommended daily intake (RDI).
Recommended daily intake (RDI)	(RDI) has been worked out using the estimated level of daily nutrition and energy required for a healthy and proportionate diet.
Glycaemic Index	The glycaemic index (GI) is a good indicator of how fast food is converted into glucose and immersed into the bloodstream.

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6. In what order are ingredients listed on a food label?

(AC1.7)

Ingredients are usually listed on food labels in descending order of weight.

7. What <u>four</u> pieces of information are always listed on a nutrition label?

(AC1.7)

1.	The information table printed on food packaging gives an average amount of Protein.
2.	The information table printed on food packaging gives an average amount of Carbohydrates, keeping the sugar content seperate.
3.	The information table printed on food packaging gives an average amount of Fat, keeping the saturated fat content seperate.
4.	The information table printed on food packaging gives an average amount of salt (sodium).

8. For the nutrition label shown, calculate the percentages of kcal supplied by protein, carbohydrate and fat.

Learner guidance: first calculate how many calories are in each macronutrient and then divide your answer by the total energy

Typical values	**Per 100g**
Energy	197kcal
Protein	11.7g
Carbohydrates	20.9g
Fat	7.0g

(AC1.7)

Nutrient	**Percentage kcal**
Protein	11.7 x 4=46.8 kcal 197kcal/46.8kcal=4.21 100/4.21=23.75%
Carbohydrate	20.9 x 4=83.6 kcal 197kcal/83.6kcal=2.36 100/2.36=42.37%
Fat	7 x 9=63kcal 197kcal/63kcal=3.13 100/3.13=31.95%

9. What do the given food labelling terms mean?

(AC1.7)

Term	**Meaning**
"Fat free"	Fat free product not containing animal or vegetatable fats (no more than 0.5g of fat per 100g).
"Low fat"	Low fat means no more than 3g of fat per 100g.
"Lite"/"Light"	Lite/Light means a food that is fewer than a third in calories, less than 50% fat or less than 50% sodium and a lighter colour in texture.

10. This question is in two parts.

a) Give an example of a healthy alternative method of preparing/cooking food.

Steam cooking is an example of a healthy alternative method of cooking food.

b) How can the example of healthy food preparation you gave for question 10a contribute to a healthy diet?

(AC1.8)

Steam cooking helps preserving the water-soluble B & C vitamins, potassium, phosphorus & zinc. Steaming preserves important nutrients and 90% of antioxidants in fresh vegetables, contributing to a healthy diet.

11. Explain the relationship between blood cholesterol levels and disease.

(AC1.9)

Saturated fats raise low-density lipoprotein in the blood, raising blood cholesterol levels. Cholesterol builds up and begins to thicken the arteries. This, in turn, makes the heart perform harder to drive blood through. The additional burden on the heart progressively reduces its strength and makes the chances of having a heart attack more likely.

12. Complete the following table to show the effect of different types of fat on blood cholesterol levels.

    (AC1.9)

Type of fat	Effect of high-density lipoproteins (HDL)	Effect on low density lipoproteins
Saturated	Decreases HDL. Increases LDL.	
Monounsaturated	Increases HDL. Decreases LDL.	
Polyunsaturated	Decreases HDL. Decreases LDL.	
Trans fatty acids	Decreases HDL. Increases LDL.	

13. Explain the relationship between physical inactivity, body composition (obesity) and disease.

    (AC1.9)

A decrease in physical inactivity will have a negative effect on body composition (obesity) and disease due to the calorie equation more calories consumed than burned off for fuel, and increased risk of disease due to the lack of oxygen supplied to the working muscles and organs.

14. Identify three professional job roles, and three professional bodies involved in the area of nutrition.

(AC2.1)

Professional roles	
1.	A Professional role of the SACN has been re-evaluating the population advice for estimated energy needs in 2011. Providing a report entitled 'Carbohydrates and Health 2015' in which they issued new advice for free sugars and fibre nutrients. Providing a report entitled 'Vitamin D and Health 2016' in which it issued new advice on vitamin D.
2.	A professional role of the UK Food Standards Agency (FSA) has been developing generic information that can be used when a ' normal ' diet is required. The ' Eatwell Guide ' produced by the FSA gives graphical representation of the proportions of food that should be taken to meet a basic level of nutritional health amongst most of the population.
3.	Another professional role of the FSA has been that they issued guidance to companies and stores, reminding them of the right way in which to describe certain details on food labels. This will prevent consumers from being misled.

Professional bodies	
1.	The national health service (NHS).
2.	The Scientific Advisory Committee on Nutrition (SACN).
3.	The UK Food Standards Agency (FSA).

15. The Department of Health/NHS recommend the ‘eight tips for healthy eating’.

    Complete the table to explain how each tip supports a healthy diet.

    (AC2.2)

Eight tips for healthy eating	**How this supports a healthy diet**
Base your meals on starchy food	As this supplys the body with mainly compex carbs which are the bodys preferred energy source, however whole food and whole grain choices also supply fibre and vitamins and minerals which disolve quickly into the body, this will have a very positive impact when supporting a healthy diet.
Eat lots of fruit and veg	Eating lots of fruit and veg both provide a generous amont of minerals, Vitamins that dissolve quick into the body, fibre, water and in addition vegetables provide complex carbohydrate, and fruit supplies sugar, this will have a very positive impact when supporting a healthy diet.
Eat more fish	Eating more fish provides protein, naturally occuring good polyunsaturated fats, along with important fat soluable vitamins and minerals which can quickly be released into the body, this will have a very positive impact when supporting a healthy diet.
Cut down on saturated fat and sugar	Cutting down on saturated fat and sugar will have a very positive impact when supporting a healthy diet as saturated fat will really increase bad cholestrel which run the risk of CHD, and sugar will increase quick spikes of energy from glycogen which if not burnt off at the time may store in the body as adipoise fat, leading to poor body composition.
Eat less salt	Eating less salt, will reduce the amount of sodium consumed which when in excess can cause hardening of the arteries running a high risk of CHD.
Get active and be a healthy weight	Getting active and being a healthy weight works hand in hand with a healthy diet by allowing the body to utilising the full benefits of a healthy diet promoting good physical and mental health, therefore having a very positive impact on well being.
Don’t get thirsty	Getting thirsty will cause dehydration which will promote numerous negative effects on your body, so by not getting thirsty this will have a very positive impact when supporting a healthy diet.
Don’t skip breakfast	After the body fasting as such with no consumption of food whilst sleeping, its vital to not skip breakfast to give you the nutritional needs and energy needed to start your day.

16. The National Food Guide is based around the ‘eatwell plate’/‘food pyramid’.

Complete the table below to identify a range of recommended portion numbers (for individuals requiring a 1600kcal - 3000kcal diet) for each given food group, and the main nutrients each food group contributes to the diet.

(AC2.3)

Food group	**Recommended portion numbers**	**Main nutrients in food group that contribute to a healthy diet**
Bread, cereal, rice and pasta	6 -11 Portion numbers.	The main nutrients are mainly com
Vegetables	3 - 5+ Portion numbers.	The main nutrients are mainly that
Fruits	2 - 4+ Portion numbers.	The main nutrients are mainly that
Meat, poultry, fish, beans, eggs and nuts	2 - 5 Portion numbers.	Protein is the main nutrient. Fat als
Dairy (milk, yoghurt and cheese)	2 - 4 Portion numbers.	The main nutrients here are protei
Fats, oils and sweet foods	0 - 3 Portion numbers.	These are of poor nutritional value

17. Give an example of a portion size for each given food group.

(AC2.4)

Food group	Example portion size
Fruit	Example portion size would be- small fruit (15 x cherries, 6-8 x strawberries, 2 x kiwis, 2 x plums). Moderate fruit (1 whole apple, pear, banana or an orange). Large fruit (half a grapefruit, a slice of melon or half a mango).
Vegetables	Green vegetables (2 x brocolli heads or 4 spinach or green beans). Salad vegetables (4 x celery sticks or 7-8 cherry tomotoes). Cooked vegetables (3 full table spoons of cauliflower, carrot, cabbage or peas).
Bread, cereal, rice, pasta, and other starchy foods	A single slice of bread. A handful of rice, cous cous or pasta. A small to moderate size potato.
Dairy (milk, yoghurt, cheese)	1 medium cup of milk. 150ml yoghurt portion.
Meat, poultry, fish, beans, eggs and nuts	A piece of fish approx 15cm. Lean meat 10cm x 5cm. 1 arge boiled egg.
Fats, oils and sweet foods	Consumption of such products should not exceed 8% of overall daily food intake.

18. Explain how to access reliable sources of nutritional information.

    (AC2.5)

Food companies are legally required to put on a lot of information on their labels, this would be a reliable source of nutritional information.

19. How can you tell whether a nutritional claim from a supplier is based on evidence, or is an unsupported claim from that organisation?

    (AC2.6)

The Food Advisory Committee (FSA) has issued guidance to companies and stores, reminding them of the right way in which to describe certain details on food labels, this is how you can tell whether a nutritional claim from a supplier is based on evidence, or is an unsupported claim from that organisation.

20. Explain what nutritional advice is acceptable to offer in your role as an exercise instructor.

    Give two examples.

    (AC3.1)

1.	It is acceptable to provide healthy eating advice to clients based on UK recognised guidelines within my role as an exercise instructor.
2.	It is acceptable to communicate with professionals in the field of diet and nutrition as well as refer my clients to these professionals.

21. Under what circumstances would it be necessary to refer a client to a dietician?

    (AC3.1)

Circumstances where it would it be necessary to refer a client to a dietician would be for Digestion issues, after diagnosis of a condition like diabetes, high blood pressure or heart disease, where a child has specific nutritional needs, where there is a need to lose weight safely, where there is a need to gain weight after being diagnosed with a medical condition or after a bout of illness, where surgery is an option for weight reduction, advice regarding breastfeeding and weaning, to confirm the existence of an allergy or food intolerance, advice surrounding eating disorders, to improve chances of conceiving a child, practical advice to carers on suitable nutrition for the people they are caring for, or advice on how to enhance fitness levels and athletic achievement.

22. Why is it important to explain health risks associated with weight loss fads and popular diets to clients?

    (AC3.2)

It important to explain health risks associated with weight loss fads and popular diets to clients so we can explain any potential health risks that may be associated them, so the clients can then understand the health risks and make informed choices about their diet.

23. Give two examples of the health and performance implications of severe:
- Energy restriction
- Weight loss
- Weight gain

(AC3.3)

Examples of the health and performance implications of severe energy restriction	
1.	Reduced exercise performance.
2.	Lower energy levels and lack of energy.

Examples of the health and performance implications of severe weight loss	
1.	Loss of muscle tissue (muscle catabolism).
2.	Over weight individuals may benefit from weight loss.

Examples of the health and performance implications of severe weight gain	
1.	Increased risk of diseases associated with weight gain eg CHD, diabetes.
2.	It may improve performance in some activities where bulk is important eg sumo, or power lifting.

24. Identify four types of clients who would be at increased risk of nutritional deficiencies.

(AC3.4)

1.	Pregnant population.
2.	A person who is ill or have a medical condition.
3.	Elderly population.
4.	young/teenage population.

25. Explain how culture and religion can influence nutritional advice.

(AC3.5)

Some cultures and religions have a strict view on diet, for example alot of asian culture would not consume their daily required protein intake via animal sources and may require to source their protein intake from vegetables such as beans, pulses and lentils.

26. Describe the potential benefits, contradictions, and safety of protein supplementation.

(AC3.6)

Potential benefits of protein supplementation
In combination with balanced eating and a fitness plan, potential benefits of protein supplementation can help you lose weight, put on lean muscle and satisfy your daily nutritional requirements.

Potential contraindications and safety of protein supplementation
Potential contraindications and safety of protein supplementation can be if you regularly exceed your daily protein requirements on a long-term basis, for example, you may experience an elevated risk of diverticulitis, nutrient deficiencies and heart or kidney problems.

27. Describe the potential benefits, contradictions, and safety of vitamin and mineral supplementation.

    (AC3.6)

Potential benefits of vitamin and mineral supplementation.
Potential benefits of vitamin and mineral supplementation can include increased energy, healthier hair and skin, and prevention of heart disease, cancer, and other chronic diseases.

Potential contraindications and safety of vitamin and mineral supplementation.
Potential contraindications and safety of vitamin and mineral supplementation maybe when taken in too high a level they can lead to toxicity within the body .

28. Why should detailed or complex dietary analysis that incorporates major dietary change always be referred to a registered dietician?

    (AC3.7)

If there is a detailed or complex dietary analysis that incorporates major dietary change it should always be referred to a registered dietician as a personal trainer qualification will allow you to provide healthy eating advice to clients based on UK recognised guidelines.

29. Define the roles of carbohydrate, fat and protein for aerobic and anaerobic energy production.

(AC4.1)

Type of energy production	Roles of carbohydrate, fat and protein
Aerobic	The role of carbohydrate on aerobic energy production is relatively low at providing approx 30% of energy. The role of fat on aerobic energy production is the bodys preferred source of energy providing approx 70% of energy. The role of protein on aerobic energy production is that it only becomes a main supplier of energy when exercise is maintained for several hours.
Anaerobic	The role of carbohydrate on anaerobic energy production is the bodys preferred source of energy providing approx 70% of energy. The role of fat on anaerobic energy production is relatively low at providing approx 30% of energy. The role of protein on aerobic energy production is that it only represents a small amount of the energy which is used.

30. Explain the energy balance equations.

(AC4.2)

	Explanation of energy balance equation
For a client to maintain body weight	Food intake should equal energy expenditure.
For a client to increase body weight	Food intake should out weigh energy expenditure.
For a client to decrease body weight	Energy expenditure should out weigh food intake.

31. What are the three main components of energy expenditure?

(AC4.2)

1.	One component of energy expenditure would be the Basal metabolic rate (BMR).
2.	Another component of energy expenditure would be the Thermic effect of food (TEF).
3.	The third component of energy expenditure would be Physical activity.

32. This question is in three parts.

a) Calculate an estimate of the basal metabolic rate (BMR) for a 75kg male individual aged 35 years old. Show your workings.

BMR= 11.5 x 75kg (W)= 862.5 + 873= 1735.5 kcal (SEE) = 167 kcal

b) Based on your answer to the previous question, calculate the daily energy expenditure for this individual if they are:

Learner guidance: use physical activity multipliers

Activity level	Daily energy expenditure
Sedentary	1735.5 x 1.4 = 2430 Kcal/Day.
Moderately active	1735.5 x 1.7 = 2950 Kcal/Day.
Very active	1735.5 x 1.9 = 3297 Kcal/Day.

c) Apart from physical activity, what other factors can affect daily energy expenditure?
Learner guidance: consider 'individuality'

(AC4.3. 4.4)

Apart from physical activity really anything else that results in an increase to your metabolic rate can affect daily energy expenditure. This includes stress, fear and illnesses, as well as individual factors eg gender, age, and lifestyle.

33. Identify the typical energy expenditures for the following physical activities:
Learner guidance: please show your calculations
(AC4.5)

Activity	Kcal/hour/kg. body weight
Walking at 3.5 mph	0.06 x 75kg x 60 min= 270 calories
Jogging at 6mph	0.12 x 75kg x 60 min= 540 calories
Bicycling at 10mph	0.12 x 75kg x 60 min= 540 calories
House cleaning	0.06 x 75kg x 60 min= 270 calories
Swimming, slow crawl	0.1 x 75kg x 60 min= 450 calories

34. Evaluate how the following nutritional requirements will change if a sedentary client starts to engage in regular physical activity in terms of:

(AC4.6**)**

Total energy	Total energy requirements will need to increase if a sedentary client starts to engage in regular physical activity.
Protein	Total protein requirements will need to increase if a sedentary client starts to engage in regular physical activity.
Carbohydrate	Total carbohydrate requirements will need to increase if a sedentary client starts to engage in regular physical activity.
Fat	Total fat requirements will need to increase if a sedentary client starts to engage in regular physical activity.
Hydration	Total hydration requirements will need to increase if a sedentary client starts to engage in regular physical activity.

35. Why is it important to obtain a client's informed consent before collecting nutritional information?

    (AC5.1)

It important to obtain a clients informed consent before collecting nutritional information as we want to gather as much information as possible which may be of a personal or sensitive nature, so they will know what information I wish to collect, how it will be used, and i will be able to explain the benefits and risks of collecting nutritional information, allowing the client to make a informed decision, also from the trainers perspective, legally a signed consented paperwork is evidence of duty of care in case of any future legal claim against myself the trainer.

36. Give five examples of information that need to be collected in order to offer nutritional advice to clients.

(AC5.2)

1.	Age, gender, weight and height.
2.	Lifestyle.
3.	Current dietary intake.
4.	Food likes and dislikes.
5.	Goals and motivation.

37. Explain the legal and ethical implications of collecting nutritional information.

(AC5.3)

When collecting and storing clients information you need to consider ethics: Data protection Act and confidentiality, also from a legal point of view a signed consented paperwork is evidence of duty of care in case of any future legal claim against myself the trainer.

38. Why is confidentiality important when collecting nutritional information?

(AC5.5)

Confidentiality is important when collecting nutritional information as there maybe sensitive issues such as Previous/current health problems or Previous/current dietary habits/beliefs.

39. Give two examples of sensitive information you might collect when asking about a client's nutrition.

(AC5.6)

1.	Previous/current health problems.
2.	Previous/current dietary habits/beliefs.

40. Listed in the table below are three methods of measuring body composition.

Explain how each is used to measure health risk in relation to weight.

(AC5.7, 6.1)

Method	How it is used to measure health risk
Body Mass Index (BMI)	height to weight ratio to give a number reading which can be compared on a chart to measure health risk.
Waist circumference (WC)	A measurement of the mid waist line to get a number reading which can be compared on a chart to measure health risk.
Waist-to-hip ratio	A measurement of both hips and waist to give a hip to waist ratio to get a number reading which can be compared on a chart to measure health risk.
Skin folds and skin fold indices	This will give a measure of body fat percentage.
Bioelectrical impedance	This will help with assessing body composition by measuring body fat and body muscle content.

41. Describe the following basic dietary assessment methods:

(AC5.4, 6.1)

Verbal questioning by instructor	Verbal questioning by the instructor as a basic dietary assessment method may be limited in the information which can be gained as it is only as accurate as the clients honesty and how much information the client would remember, as well not give accurate information regarding portion sizes.
24 hours food recall diary	Again, a 24 hours food recall diary as a basic dietary assessment method may be limited in the information which can be gained as it is only as accurate as the clients honesty and how much information the client would remember, and may only give information of the given day instead of true reflection of a persons diet, as well not give accurate information regarding portion sizes.
Weighted food diary	A weighted food diary as a basic dietary assessment could give a more accurate true reflection of a persons diet and amount of macros consumed, as well as give more accurate information regarding portion sizes.

42. Explain how you can use the following methods to analyse and interpret collected nutrition information so that a client's needs can be identified.

(AC6.2)

Method	**How this can be used to analyse and interpret information and identify needs**
Counting servings/portions of the different food groups eaten	Counting servings/portions of the different food groups eaten can be used to analyse and interpret information and identify needs by showing the calorie intake.
Adding up grams of fats/carbohydrates/proteins eaten	Adding up grams of fats/carbohydrates/proteins eaten can be used to analyse and interpret information and identify needs by accurately showing how much macros are consumed and the ratio intake of the individual macros.

43. Explain how you would discuss sensitive information with clients.

    (AC6.4)

I would slowly build a relationship with the client and show concern for their well-being. Once a rapport has been established, the client can be directed to a GP where the client can go on to be referred to a dietitian, counsellor or psychologist.

44. Explain how to recognise signs and symptoms of:
    - Disordered eating
    - Healthy eating patterns

    (AC6.5)

Disordered eating
Skipping meals. Restricting types of food to a few low-calorie foods like lettuce or celery. Excessively weighing themselves. Excessively checking appearance. Showing discontent about weight. Being anxious and overactive. Wearing overly loose clothes to hide their fat. Making excuses about why they arent eating. Cooking lavish meals for others but not eating any or a tiny portion. Visiting websites which encourage anorexia and over-exercising, can all be signs and symptoms of disordered eating.

Healthy eating patterns
Regular eating patterns. Eating within recommended portion sizes. Feeling healthy and energetic. Not skipping breakfast. Eating plenty of whole foods, fruit and veg.

45. Describe the key features of the industry guidance note on, “Managing Users with Suspected Eating Disorders”.

    (AC6.6)

The key features of the industry guidance on Managing users with Suspected Eating Disorders (IRSM) are- Do not be afraid to approach someone with an eating disorder, it is for their benefit. Do not use aggressive language or threaten to take their membership away. Do not try to make them see that they are “ too thin ” . Do not comment on their weight or appearance. Do reinforce their self-worth. Do let them know that you are their for support. Encourage them to call a GP/eating disorder specialist. If the individual is in serious danger then it is permissible to suspend their membership and only return with a doctors approval.

46. Give three examples of circumstances in which a client should be referred to their GP about seeking further dietary advice.

(AC6.7)

1.	An example of a circumstance in which I would refer a client to their GP about seeking further dietary advice would be after diagnosis of a condition like diabetes, high blood pressure or heart disease.
2.	Another example of a circumstance in which I would refer a client to their GP about seeking further dietary advice would be to confirm the existence of an allergy or food intolerance.
3.	And another example of a circumstance in which I would refer a client to their GP about seeking further dietary advice would be where there is a need to gain weight after being diagnosed with a medical condition or after a bout of illness.

47. Explain what is meant by the acronym SMART when applied to goal setting.

(AC7.1)

S- Specific M- Measureable A- Achievable R- Realistic T- Timebound

48. What basic healthy eating advice, reflecting current national guidelines, could you offer a client to help them achieve the following SMART goals?

    (AC7.2)

Goal	Healthy eating advice, reflecting current national guidelines
Reduce blood pressure to a healthy range within six months	Reduce saturated fat as well as daily sodium intake whilst increasing unsaturated fat intake within the current national guidelines, and total daily fat intake ratio in line with the current national guidelines.
Lose 1 stone/7kg fat in three months	Reduce saturated fat and increase unsaturated fat intake within the current national guidelines, and total daily fat intake ratio in line with the current national guidelines. As well as increasing protein intake and decreasing carb intake, along with a reduction of daily calorie consumption.
Reduce blood cholesterol level to a healthy range within six months	Reduce saturated fat and increase unsaturated fat intake within the current national guidelines, and total daily fat intake ratio in line with the current national guidelines.

49. Give two examples of other people who could be involved in the client's nutritional goal setting, and explain when it would be appropriate for these people to be involved.

    (AC7.3, 7.4)

Person	When appropriate to be involved
Family/partner	Helping with clients goals when preparing food at home.
Trainer	Helping with clients goals by assessing clients food diary and advising on changes required.

50. Identify three common barriers that may prevent clients achieving their nutritional goals.

(AC7.5)

1.	Lack of time may be a common barrier that may prevent clients achieving their nutritional goals. A hectic lifestyle and eating on the run can lead to unhealthy food choices.
2.	Finanicial restrictions may be another common barrier that may prevent clients achieving their nutritional goals.
3.	Religious practices may be another common barrier that may prevent clients achieving their nutritional goals

51. Give three examples of basic motivational strategies to encourage healthy eating and prevent non-compliance or relapse.

(AC7.6)

1.	Set small, measurable goals that will help you get to your overall large goal. For instance – I will eat 5 servings of fruit and vegetables a day, incorporate leafy green veggies into 3 meals a day, drink at least 68 ounces of water daily, etc.
2.	Keep a food and exercise journal. This is extremely helpful to track how much you are eating – sometimes you dont realize how many small bites here and there add up. You can do a hand-written journal or go digital and log your food/fitness from the computer or your smartphone. MyFitnessPal is a great resource for this.
3.	Keep tempting foods that trigger you to overeat out of the house.

52. Give two reasons why it is important to reappraise a client's health parameters at agreed stages of a programme.

These could include body composition, blood pressure, waist measurement, cholesterol or BMI.

(AC7.7)

1.	One reason why it is important to reappraise a clients health parameters at agreed stages of a programme as it will give you a formal opportunity to dig around with a client and work out why the training approach is working and/or what could be improved.
2.	Another reason why it is important to reappraise a clients health parameters at agreed stages of a programme as these can be used as a way to refresh the focus and motivation of the client.

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Assessor/IV Feedback

Question	Feedback and further actions

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Unit sign off **L/600/9054 Applying the principles of nutrition to a physical activity programme**	
Learner name: Marc Whiteside	
Learner registration number:	
Centre name/number: Educate Fitness	
Assessor/tutor name: Matt Sugai	
Your job role (if applicable):	
Main organisation (this will either be the organisation the learner is employed by or, if the Learner is not currently employed, an organisation they are familiar with):	
I confirm that the answers given in this workbook are my own work	
Learner Signature: Marc Whiteside	Date: 08/10/2021
I confirm that the answers given in this workbook have been assessed against the assessment criteria for this unit and have been judged for validity, authenticity, currency, reliability and sufficiency.	
Assessor Name:	
Assessor Signature:	Date:
IQA Name & Signature: (if applicable)	Date:

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Learner Notes

Question	Notes