

BTEC

HIGHER NATIONALS

Sport and Exercise Science



Higher National
Certificate Lvl 4

Unit 1: Nutrition

Unit code	Y/616/0950
Unit type	Core
Unit level	4
Credit value	15

Introduction

The food we consume directly influences the functions of our body. Our bodies need adequate nutrition otherwise they begin to function abnormally. We can optimise our physical and psychological wellbeing by consuming a healthy balanced diet.

This unit aims to equip the student with the knowledge, skills and competencies to understand the nutritional composition of food and the effects of nutritional choices on the health of a person. Students will gain knowledge of the importance of eating a balanced diet and the dangers associated with the consumption of a poor diet. They will focus on diet prescription for specific populations and gain an understanding of labelling systems and the pitfalls that can be associated with them.

Students will research current therapeutic diets for specific groups with intolerances and diseases while also investigating fad diets. Students will learn about the components of the digestive system and how it functions and will become familiar with the academic language associated with nutrition. Within this unit students will engage in self-directed learning.

Learning Outcomes

By the end of this unit students will be able to:

1. Identify the main components of nutrition for optimal health and sports performance
2. Explain the main components of the digestive system and the factors that affect optimal function
3. Investigate the connection between food consumption and disease
4. Explore a range of specific diets, with particular focus on their dietary principles.

Essential content

LO1 Identify the main components of nutrition for optimal health and sports performance

Definition, structure, function and sources of micro and macro nutrients:

Protein, fats, carbohydrates vitamins and minerals

Food pyramid and food groups

Cholesterol

Deficiencies of micro and macro nutrients

Effects of dehydration

The importance of soluble and insoluble fibre in the diet

Super foods

The nutritional needs of specific populations in society:

Athletes, children, young people, adults, the elderly, and pregnant mothers

Sports – strength and endurance athletes

Food labels:

Labelling systems, e.g. the traffic light system

Nutritional information, e.g. ingredients and additives

Marketing tools, brand imaging, the effectiveness of food labels

Review the European Union (EU) labelling laws

Potential benefits of nutritional supplements in sports

LO2 Explain the main components of the digestive system and the factors that affect optimal function

Physiology of the digestive system and ancillary organs:

Functions of the digestive system, e.g. mechanical and chemical digestion

Functions of the liver, pancreas, gall bladder and the kidneys

Five phases involved in the digestive process

Different processes involved in digestion and where they occur – ingestion of food, breakdown, digestion, absorption, and defecation

Microbiome and microbiota:

Microbiome in terms of its function and the microbiota that inhabit it

Role of microbes in sustaining a healthy gut, leaky gut

Microbiome and the pathophysiology of the body

Healthy diet in maintaining a healthy gut, consumption of prebiotics and probiotics

LO3 Investigate the connection between food consumption and disease

Disordered physiological processes:

Energy balance, input versus output, calculation, Harris Benedict equation

Poor dietary habits, e.g. atherosclerosis, hypo-dyslipidaemia, hypertension, joint problems obesity, Type 2 diabetes, coronary heart disease, inflammatory disorders, depression, anxiety and food intolerance

Factors leading to these conditions:

Dietary improvements to improve health

Nutritional tests, medical tests:

Heart angiogram, York test, foetal test, urine test, small intestine biopsy for microbes, cholesterol test and vitamin D blood test, among others

LO4 Explore a range of specific diets, with particular focus on their dietary principles

Prescriptive diets:

The athletic diet for strength and endurance, Coeliac diet, lactose intolerant diet, vegan diet, diabetic diet, vegetarian

Dysfunctional diets:

High fat diet, processed food diet, high sugar diet, high alcohol diet

Fad diets:

Atkins diet, celebrity, slim diet, 5/2 diet, probiotic diet, apple cider vinegar diet, Mediterranean diet, the ketone diet, food map diet

Learning Outcomes and Assessment Criteria

Pass	Merit	Distinction
LO1 Identify the main components of nutrition for optimal health and sports performance		D1 Analyse different food labels, discuss their nutritional benefits and shortcomings, pay particular attention to any additives that may be in the ingredients
P1 Outline the structure, function and sources of micro and macro nutrients and impact of deficiencies P2 Discuss the specific nutritional requirements of specific populations, including an athlete	M1 Identify why labels are important for the consumer M2 Demonstrate a knowledge of food labelling laws, including knowledge about additives, nutritional information and ingredients lists	
LO2 Explain the main components of the digestive system and the factors that affect optimal function		D2 Analyse how the microbiome can affect the pathophysiology of the body
P3 Explain the physiology of the digestive system and ancillary organs P4 Discuss the importance of a healthy diet in maintaining a healthy gut	M3 Discuss the functional properties of the microbiome	
LO3 Investigate the connection between food consumption and disease		D3 Make nutritional recommendations that could be implemented to reverse or improve these conditions
P5 Discuss specific disordered physiological processes that can occur due to poor dietary habits	M4 Identify the range of nutritional tests that are available to people suffering from nutrition-related conditions	
LO4 Explore a range of specific diets, with particular focus on their dietary principles		D4 Evaluate the validity of these diets based on scientific research and medical statistics
P6 Differentiate between fad diets, prescriptive diets and dysfunctional diets	M5 Discuss one of each diet category: fad diet, prescriptive diet, and dysfunctional diet	

Recommended resources

Textbooks

- BEEN, A. (Great Britain) (2013) *The complete guide to sports nutrition*. 7th ed. Bloomsbury Sport.
- HOLFORD, P. (Great Britain) (2004) *The Optimum Nutrition Bible*. Piatkus.
- HOLFORD, P. (Great Britain) (2007) *The Optimum Nutrition For The Mind*. Piatkus.
- MAYER, E. (USA) (2016) *The Mind Gut Connection Wave*. Harper.
- PERLMUTTER, D. (Great Britain) (2015) *Brain Maker*. Yellow Kite.

Websites

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| www.food.gov.uk | Research allergies intolerances
General reference regulation legislation
Food alerts discussion forum |
| www.nutrition.org.uk | Research
General reference
Nutrition science |

Links

This unit links to the following related units:

Unit 7: Physical Activity, Lifestyle & Health

Unit 3: Anatomy & Physiology

Unit 26: Exercise Physiology

Unit 27: Advanced Nutrition