

# YMCA Level 4 Certificate in Advanced Nutrition for Health, Weight Management and Sports Performance (610/2694/3)

Operational start date: 1 June 2023

## Qualification Specification





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# YMCA Level 4 Certificate in Advanced Nutrition for Health, Weight Management and Sports Performance (610/2694/3)

## Qualification Specification

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# Introduction

YMCA Awards is part of Central YMCA – the world’s first YMCA – a national charity that’s been helping people make positive changes in their lives since 1844.

We’re experts in education, health, and wellbeing with over 20 years’ experience developing UK-regulated and globally recognised qualifications.

We work closely with industry experts, employers, and training providers to make sure that our products and services deliver life-changing opportunities. With over half a million qualifications awarded, 300,000 people have advanced their careers with YMCA Awards.

## Aim

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### YMCA Level 4 Certificate in Advanced Nutrition for Health, Weight Management and Sports Performance (610/2694/3)

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The aim of this qualification is to provide learners with knowledge and skills to apply reliable, evidence-based nutritional science and healthy eating recommendations.

Learners will gain an understanding of nutritional science and their application to exercise, sport and athletic performance.

This includes:

- The limitations and risks of supplements and performance aids.
- The importance of hydration for sports performance.

Working within their scope of practice they will be able to support their clients in their understanding of the relevance of official guidelines to personal food preferences and needs, including for:

- health and wellbeing
- weight management
- sports performance.

Learners will also learn how to direct individuals who participate in physical activity and exercise to reputable sources of information when required.

**Note:** These qualifications do not enable learners to provide prescribed, individualised, or bespoke diets, or nutritional advice for individuals who have medical conditions or for elite/professional athletes. These individuals should be referred on to a suitably qualified medical or nutrition professional (ANutr, RNutr, RD). Please see Appendix 2: Association for Nutrition (AfN) code of practice for more information.

# Progression opportunities

This qualification can lead to further training at the same and/or higher levels in a range of qualifications. For example:

- YMCA Level 3 Diploma in Personal Training (Practitioner) (603/2438/7)
- YMCA Level 3 Diploma in Exercise Referral (603/3103/3)
- YMCA Level 4 Certificate in Weight Management for Individuals with Obesity, Diabetes Mellitus and/or Metabolic Syndrome (600/6752/4).

# Stakeholder engagement

## Association for Nutrition (AfN)

These qualifications map to, and are endorsed against, the AfN competence framework in nutrition for fitness and leisure:

Qualification	AfN competence framework in nutrition for fitness and leisure
YMCA Level 4 Certificate in Advanced Nutrition for Health, Weight Management and Sports Performance (610/2694/3)	<p><b>Intermediate and Advanced level</b></p> <p>All core competencies:</p> <ul style="list-style-type: none"><li>• fundamentals of human nutrition</li><li>• improving health and wellbeing</li><li>• nutrition monitoring and data collection techniques.</li></ul> <p>In addition to their YMCA Awards certificate, centres approved by AfN can also apply for learners to receive:</p> <ul style="list-style-type: none"><li>• AfN Certificate in Intermediate Nutrition Essentials for Fitness &amp; Leisure</li><li>• AfN Certificate in Advanced Nutrition Essentials for Fitness &amp; Leisure.</li></ul>



The YMCA Level 4 Certificate in Advanced Nutrition for Health, Weight Management and Sports Performance (610/2694/3) meets the nutrition requirements of the CIMSPA personal training professional standard; and awarding organisation partner endorsed continuous professional development (10 CPD points).

# Entry requirements, prerequisites, and availability

These qualifications have been designed for learners who:

- Are 16+ years old.
- Can communicate effectively with individuals and groups.

Learners can take these qualifications in:

Location	Regulated by
England	Ofqual
Northern Ireland	CCEA Regulation
Wales	Qualifications Wales
Other UK regions and outside of the UK	Ofqual

# Grading and structure

## YMCA Level 4 Certificate in Advanced Nutrition for Health, Weight Management and Sports Performance (610/2694/3)

This qualification is graded Pass or Refer.

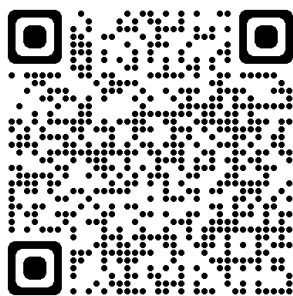
To achieve a pass, learners must complete five mandatory units.

UN	Unit title	Level
F/650/6219	Nutrition for physical activity and exercise	3
K/650/7239	Structure and functions of the digestive system	3
K/650/6220	Applied nutrition for exercise, sport, and athletic performance	4
L/650/6221	Supplements, performance aids and hydration for sports performance	4
M/650/6222	Providing dietary advice to support the needs of different athletes and sports people	4

**Guided learning hours (GLH): 150 hours.**

**Total qualification time (TQT): 309 hours.**

Find out more about GLH and TQT on our website:



[ymcaawards.co.uk/qualifications/gh-and-tqt](https://ymcaawards.co.uk/qualifications/gh-and-tqt)

# Using this document

The following pages provide the unit content for this qualification. Each unit includes learning outcomes, assessment criteria and relevant content for delivery. These are set out below.

Learning outcome ('the learner will')	
<b>Assessment criteria</b> (‘the learner can’) What a learner is expected to know, understand or be able to do following their learning.	<b>Relevant content</b> (additional delivery guidance) Suggestions on depth and breadth of content to cover.

# Assessment overview

## YMCA Level 4 Certificate in Advanced Nutrition for Health, Weight Management and Sports Performance (610/2694/3)

The table below provides details of the seven assessment tasks learners must complete to achieve this qualification.

Assessment task	Details	Unit(s) assessed
<b>1.1 Knowledge questions</b>	<p>Learners need to answer questions designed to assess their knowledge of:</p> <ul style="list-style-type: none"><li>• nutritional terminology and definitions</li><li>• macronutrients and micronutrients</li><li>• different types of diets and dietary guidelines</li><li>• energy requirements and supplements</li><li>• communication skills, scope of practice and informed consent.</li><li>• the concept of the glycaemic index, the importance of maintaining sugar levels and how diet can be used to maintain blood sugar levels</li><li>• differences between simple and complex carbohydrates</li><li>• the role of glycogen</li><li>• the role of cholesterol and the risks associated with high cholesterol levels.</li></ul> <p>All questions must be answered correctly.</p> <p>The assessment workbook is available:</p> <ul style="list-style-type: none"><li>• Digitally (auto-marked) through YMCA Awards' online system.</li><li>• In print (centre-marked) from our web shop (<a href="http://webshop.ymcaawards.co.uk">webshop.ymcaawards.co.uk</a>).</li></ul>	Nutrition for Physical Activity and Exercise (F/650/6219)

	Centres wishing to create their own questions or use their own platform must seek prior approval from YMCA Awards.	
<b>1.2 Information resources</b>	<p>Learners will create four information resources (written, electronic, video or audio) to outline:</p> <ol style="list-style-type: none"> <li>1. The relationship between nutrition, physical activity, body composition and health.</li> <li>2. Alcohol and health.</li> <li>3. The importance of hydration.</li> <li>4. The limitations and risks of weight loss and fad diets.</li> </ol> <p>The information resources should:</p> <ul style="list-style-type: none"> <li>• Use a format that is appropriate for the target audience, e.g. poster, handout, information leaflet, social media page, podcast, Facebook recording or presentation (as appropriate).</li> <li>• Be clear and concise: <ul style="list-style-type: none"> <li>○ Written resources: <ul style="list-style-type: none"> <li>- A maximum of two A4 pages (or equivalent) of information each.</li> <li>- Use short sentences and bulleted lists (as appropriate).</li> </ul> </li> <li>○ Video or audio resources: <ul style="list-style-type: none"> <li>- A maximum of 10 minutes (as appropriate).</li> <li>- Supporting written resources (as above).</li> </ul> </li> </ul> </li> <li>• Use appropriate language and images to promote exercise, physical activity and wellbeing initiatives to the client group.</li> <li>• Provide credible and evidence-based information.</li> </ul>	Nutrition for Physical Activity and Exercise (F/650/6219)

	<p>Further information on the expected content for each resource can be found in the YMCA Level 3 Award in Nutrition for Physical Activity and Exercise learner assessment record (LAR).</p> <p>Information resources will be centre assessed by an assessor. Learners must complete their own work, and group completion is not permitted.</p>	
<b>1.3 Case study</b>	<p>Learners will complete a case study on a real, apparently healthy adult who does not require nutritional intervention from a doctor/dietician or nutritionist, e.g. not diabetic, no Crohn's disease, no eating disorder.</p> <p>The client can be a:</p> <ul style="list-style-type: none"> <li>• friend or relative</li> <li>• partner or spouse.</li> </ul> <p>Further guidance and paperwork to support this activity (including the case study template learners need to complete) can be found in the YMCA Level 3 Award in Nutrition for Physical Activity and Exercise learner assessment record (LAR).</p> <p>The case study will be centre assessed by an assessor. Learners must complete their own work, and group completion is not permitted.</p> <p>Where learners do not provide sufficient evidence through the completion of the case study template, assessors may ask supplementary questions to confirm competence.</p>	Nutrition for Physical Activity and Exercise (F/650/6219)
<b>2.1 Knowledge questions</b>	<p>Learners need to answer questions designed to assess their knowledge of:</p> <ul style="list-style-type: none"> <li>• the function of the digestive system.</li> <li>• the function of each of the main structures within the digestive system.</li> <li>• the digestive process</li> </ul> <p>All questions must be answered correctly.</p>	Structure and functions of the digestive system (K/650/7239)

	<p>The assessment workbook is available:</p> <ul style="list-style-type: none"> <li>Digitally (auto-marked) through YMCA Awards' online system.</li> <li>In print (centre-marked) from our web shop (<a href="http://webshop.ymcaawards.co.uk">webshop.ymcaawards.co.uk</a>).</li> </ul> <p>Centres wishing to create their own questions or use their own platform must seek prior approval from YMCA Awards.</p>	
<b>3.1 Knowledge questions</b>	<p>Learners need to answer questions designed to assess their knowledge of:</p> <ul style="list-style-type: none"> <li>nutritional terminology and definitions</li> <li>macronutrients and micronutrients</li> <li>different types of diets and dietary guidelines</li> <li>energy requirements and supplements</li> <li>immune health</li> <li>communication skills, scope of practice and informed consent.</li> </ul> <p>All questions must be answered correctly.</p> <p>The assessment workbook is available:</p> <ul style="list-style-type: none"> <li>Digitally (auto-marked) through YMCA Awards' online system.</li> <li>In print (centre-marked) from our web shop (<a href="http://webshop.ymcaawards.co.uk">webshop.ymcaawards.co.uk</a>).</li> </ul> <p>Centres wishing to create their own questions or use their own platform must seek prior approval from YMCA Awards.</p>	<p>Applied nutrition for exercise, sport, and athletic performance (K/650/6220)</p> <p>Supplements, performance aids and hydration for sports performance (L/650/6221)</p>
<b>3.2 Information resources</b>	<p>Learners will create four information resources (written, video or audio) to outline:</p> <ol style="list-style-type: none"> <li>Fuelling for performance (for a selected activity/sport).</li> <li>Weight management for performance (for a selected activity/sport).</li> <li>Safe use of supplements.</li> </ol>	<p>Applied Nutrition for exercise, sport, and athletic performance (K/650/6220)</p>



	<p>4. Hydration and performance.</p> <p>The information resources should:</p> <ul style="list-style-type: none"> <li>• Use a format that is appropriate for the target audience, e.g. poster, handout, information leaflet, social media page, podcast, Facebook recording or presentation (as appropriate).</li> <li>• Be clear and concise: <ul style="list-style-type: none"> <li>○ Written resources: <ul style="list-style-type: none"> <li>- A maximum of two A4 pages (or equivalent) of information each.</li> <li>- Use short sentences and bulleted lists (as appropriate).</li> </ul> </li> <li>○ Video or audio resources: <ul style="list-style-type: none"> <li>- A maximum of 10 minutes (as appropriate).</li> <li>- Supporting written resources (as above).</li> </ul> </li> </ul> </li> <li>• Use appropriate language and images to promote exercise, physical activity and wellbeing initiatives to the client group.</li> <li>• Provide credible and evidence-based information.</li> </ul> <p>Further information on the expected content for each resource can be found in the YMCA Level 4 Certificate in Advanced Nutrition for Health, Weight Management and Sports Performance (610/2694/3) learner assessment record (LAR).</p> <p>Information resources will be centre assessed by an assessor. Learners must complete their own work, and group completion is not permitted.</p>	<p>Supplements, performance aids and hydration for sports performance (L/650/6221)</p> <p>Providing dietary advice to support the needs of different athletes and sports people (M/650/6222)</p>
<p><b>3.3 Case study</b></p>	<p>Learners will complete a case study on real, apparently healthy adults who:</p> <ul style="list-style-type: none"> <li>• Do not require nutritional intervention from a doctor/dietician or nutritionist, e.g. not diabetic, no Crohn's disease, no eating disorder.</li> <li>• Participate in exercise, sport and/or athletic events.</li> </ul>	<p>Providing dietary advice to support the needs of different athletes and sports people (M/650/6222)</p>

The clients may be:

- friends or relatives
- a partner or spouse.

Learners must cover the full range detailed below, which will require a minimum of two case studies:

- one vegetarian or vegan
- one older athlete
- one endurance-based activity/sport
- one strength-based activity/sport
- one health-related goal, e.g. achieving recommended daily allowance (RDA) requirements
- one weight loss or weight management goal.

Further guidance and paperwork to support this activity (including the case study template learners need to complete) can be found in the YMCA Level 4 Certificate in Advanced Nutrition for Health, Weight Management and Sports Performance (610/2694/3) learner assessment record (LAR).

The case studies will be centre assessed by an assessor. Learners must complete their own work, and group completion is not permitted.

Where learners do not provide sufficient evidence through the completion of the case study template, assessors may ask supplementary questions to confirm competence.

The minimum requirements for assessment are outlined below.

UN	Unit title	1.1	1.2	1.3	2.1	3.1	3.2	3.3
F/650/6219	Nutrition for physical activity and exercise	x	x	x				
K/650/7239	Structure and functions of the digestive system				x			
K/650/6220	Applied Nutrition for exercise, sport, and athletic performance					x	x	
L/650/6221	Supplements, performance aids and hydration for sports performance					x	x	
M/650/6222	Providing dietary advice to support the needs of different athletes and sports people						x	x

# Qualification content

# Nutrition for physical activity and exercise (F/650/6219)

## Unit aim

The aim of this unit is to provide learners with the knowledge and understanding of the key principles of nutrition and healthy eating and how these can be applied to support health and wellbeing.

Learners will develop skills to apply official and evidence-based nutritional and healthy eating guidance to support individuals participating in physical activity and exercise within scope of practice.

## Content

1. Understand the principles of nutrition for health and wellbeing	
<b>1.1 Define</b> nutritional terminology.	<ul style="list-style-type: none"><li>• Diet.</li><li>• Healthy eating.</li><li>• Nutrition.</li><li>• Healthy, balanced diet.</li><li>• Macronutrients.</li><li>• Micronutrients.</li><li>• UK dietary reference values (DRV).</li><li>• Recommended daily allowance (RDA).</li><li>• Recommended daily intake (RDI).</li><li>• Glycaemic index (GI).</li></ul>
<b>1.2 State</b> current government guidelines for healthy eating to meet individual needs.	<ul style="list-style-type: none"><li>• Eatwell guide evidence-based recommendations.</li><li>• How dietary needs can differ by gender, age and physical activity level.</li><li>• Principles of nutrition in relation to the Eatwell guide.</li><li>• How the Eatwell guide information and evidence-based recommendations can be used to support different client goals:<ul style="list-style-type: none"><li>○ Fat loss:<ul style="list-style-type: none"><li>- Creating a calorie deficit.</li><li>- Important nutrients to elicit greater fat usage and support fat loss.</li></ul></li></ul></li></ul>

	<ul style="list-style-type: none"> <li>- Greater level of protein intake to prevent muscle atrophy.</li> <li>- Higher levels of physical activity in particular resistance training and high intensity cardiovascular activity.</li> <li>o Weight loss <ul style="list-style-type: none"> <li>- Creating a calorie deficit.</li> <li>- No adjusting of macronutrient contribution as long as a calorie deficit exists.</li> </ul> </li> <li>o Hypertrophy (application exceeds scope of practice).</li> <li>o Sports performance (application exceeds scope of practice).</li> <li>• The importance of regular eating patterns to support a healthy, balanced diet.</li> </ul>
<p><b>1.3 Explain</b> the role of the macronutrients and micronutrients in health and wellbeing.</p>	<ul style="list-style-type: none"> <li>• Function and food sources of main nutrients to meet nutritional requirements: <ul style="list-style-type: none"> <li>o macronutrients – carbohydrate and fibre, fats (saturated, unsaturated, essential fatty acids), protein (complete and incomplete)</li> <li>o micronutrients – vitamins (A,C,D,E), minerals (iron, zinc, sodium).</li> </ul> </li> <li>• Proportion of each food group to meet healthy eating guidelines.</li> <li>• Calorific value of: <ul style="list-style-type: none"> <li>o fats: 9kcal/g</li> <li>o carbohydrates: 4kcal/g</li> <li>o protein: 4kcal/g</li> </ul> </li> <li>• Dietary role of each nutrient.</li> <li>• Role of nutrients in energy and Adenosine Triphosphate (ATP) production – aerobic and anaerobic metabolism.</li> <li>• The effect of different types of training on the production of fuel for exercise: <ul style="list-style-type: none"> <li>o glycogen</li> <li>o phosphocreatine</li> <li>o amino acids</li> <li>o fatty acids.</li> </ul> </li> </ul>

<p><b>1.4 Explain</b> the concept of the glycaemic index</p>	<p>Rating system for foods containing carbohydrates which shows how quickly each food affects blood sugar (glucose) levels when that food is eaten on its own</p> <ul style="list-style-type: none"><li>• High GI foods</li></ul> <p>Carbohydrate foods that are broken down quickly by the body and cause a rapid increase in blood glucose have a high GI rating.</p> <p>For example</p> <ul style="list-style-type: none"><li>○ sugar and sugary foods</li><li>○ sugary soft drinks</li><li>○ white bread</li><li>○ potatoes</li><li>○ white rice</li></ul> <ul style="list-style-type: none"><li>• Low and medium GI foods</li></ul> <p>Low or medium GI foods are broken down more slowly and cause a gradual rise in blood sugar levels over time.</p> <p>For example</p> <ul style="list-style-type: none"><li>○ vegetables</li><li>○ pulses</li></ul> <p>wholegrain foods, such as porridge oats</p>
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<p><b>1.5 Explain</b> the importance of maintaining blood sugar levels</p>	<ul style="list-style-type: none"><li>• Balance mood</li><li>• Maintain energy levels</li><li>• Assist weight management</li><li>• Reduce risk of health conditions, e.g. pre-diabetes, diabetes</li></ul> <p><b>Symptoms</b></p> <ul style="list-style-type: none"><li>• High sugar levels (hyperglycaemia)<ul style="list-style-type: none"><li>○ Fatigue</li><li>○ Feeling thirsty.</li><li>○ Having blurry vision.</li><li>○ Frequent/excessive urination.</li><li>○ Risk of ketoacidosis (diabetic coma)</li></ul></li><li>• Low sugar levels (hypoglycaemia)<ul style="list-style-type: none"><li>○ Shaking.</li><li>○ Sweating.</li><li>○ Nervousness or anxiety.</li><li>○ Irritability or confusion.</li><li>○ Dizziness.</li><li>○ Hunger</li></ul></li></ul> <p><b>Effects</b></p> <ul style="list-style-type: none"><li>• Hormone response (insulin resistance)</li><li>• Kidneys (nephropathy – a complication of diabetes)</li><li>• Vision (retinopathy – a complication of diabetes)</li><li>• Risk of cardiovascular disease</li><li>• Risk of metabolic syndrome (obesity, high cholesterol, high blood pressure)</li></ul>
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<p><b>1.6 Describe</b> the differences between simple and complex carbohydrates</p>	<p>Simple carbohydrates</p> <ul style="list-style-type: none"> <li>• called simple sugars</li> <li>• found in a variety of natural food sources including fruit, vegetables and milk</li> <li>• food a sweet taste</li> <li>• easy/quick to digest</li> <li>• often provide no nutrition other than energy- ('empty calories')</li> </ul> <p>Complex carbohydrates</p> <ul style="list-style-type: none"> <li>• called starches</li> <li>• found in wholegrain foods</li> <li>• slower to digest</li> <li>• often contain fibre</li> <li>• more likely to contain nutrients other than energy</li> </ul>
<p><b>1.7 Explain</b> how diet can be used to maintain blood sugar levels</p>	<p>Frequency of meals Food types (glycaemic index)</p>
<p><b>1.8 Explain</b> the role of glycogen</p>	<p>When blood sugar levels rise, the release of insulin causes excess glucose to be stored in the liver and muscles as glycogen,</p> <p>When the body requires energy, glucagon breaks down glycogen back into glucose.</p> <p>It therefore serves as an energy reserve by helping maintain blood sugar levels (especially during aerobic exercise)</p>
<p><b>1.9 Explain</b> the role of cholesterol</p>	<p>Plays a vital role in how every cell works and is also needed to make Vitamin D, some hormones and bile for digestion.</p>
<p><b>1.10 Explain</b> the risks associated with high cholesterol levels</p>	<ul style="list-style-type: none"> <li>• Too much cholesterol in the blood can increase your risk of getting heart and circulatory diseases.</li> <li>• Different types of cholesterol <ul style="list-style-type: none"> <li>○ low density (or non-high density) lipoproteins – unhelpful</li> <li>○ high density lipoproteins – helpful</li> </ul> </li> </ul> <p>Foods and lifestyle choices lead to an increase in both types of cholesterol</p>

<p><b>1.11 Describe</b> the relationship between nutrition, physical activity, body composition and health.</p>	<ul style="list-style-type: none"> <li>• Boundaries and responsibilities: <ul style="list-style-type: none"> <li>○ When and how to seek further information.</li> <li>○ When and how to refer individuals (See 2.6 and Appendix 2: AfN scope of practice).</li> <li>○ Health conditions listed are outside of scope of practice and should be signposted to a suitably qualified medical or nutrition professional, i.e. ANutr, RNutr, Registered dietitian (RD).</li> </ul> </li> <li>• Health and disease risk factors linked with poor nutrition and physical inactivity: <ul style="list-style-type: none"> <li>○ Body composition (lean: fat tissue ratio).</li> <li>○ Obesity.</li> <li>○ Type II diabetes.</li> <li>○ Cardiovascular disease (coronary heart disease, high blood pressure, high cholesterol, stroke).</li> <li>○ Cancer.</li> <li>○ Eating disorders.</li> <li>○ Effects of cholesterol: <ul style="list-style-type: none"> <li>- Plays a vital role in how every cell works and is also needed to make Vitamin D, some hormones and bile for digestion.</li> <li>- Too much cholesterol in the blood can increase your risk of getting heart and circulatory diseases.</li> <li>- Different types of cholesterol: <ul style="list-style-type: none"> <li>▪ low density lipoproteins – unhelpful</li> <li>▪ high density lipoproteins – helpful.</li> </ul> </li> <li>- Foods and lifestyle choices lead to an increase in both types of cholesterol.</li> </ul> </li> <li>○ Effects of the different type of fats: <ul style="list-style-type: none"> <li>- saturated</li> <li>- monounsaturated</li> <li>- polyunsaturated</li> <li>- hydrogenated fats</li> <li>- essential fatty acids - omega 3 and 6 ratio</li> <li>- effects of excess sugar, salt etc.</li> </ul> </li> </ul> </li> <li>• Methods of altering energy intake (see 1.7/1.8 and 2.2).</li> <li>• Healthy food choices to support healthy eating and weight management (see 1.2).</li> </ul>
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<p><b>1.12 Identify</b> Individuals and groups at risk of over and undernutrition.</p>	<ul style="list-style-type: none"> <li>• Groups at risk: <ul style="list-style-type: none"> <li>○ iron deficiency: <ul style="list-style-type: none"> <li>- vegetarians, vegans, menstruating women, pre-school children.</li> </ul> </li> <li>○ iodine deficiency: <ul style="list-style-type: none"> <li>- can lead to thyroid hormone production problems.</li> </ul> </li> <li>○ vitamin D deficiency: <ul style="list-style-type: none"> <li>- people with dark skin, people with little sunlight exposure.</li> </ul> </li> <li>○ calcium deficiency: <ul style="list-style-type: none"> <li>- young females and the elderly.</li> </ul> </li> </ul> </li> <li>• Signs and symptoms of over and undernutrition.</li> <li>• Cultural and religious dietary practices that will influence nutritional advice.</li> <li>• How to recognise the signs and symptoms of disordered eating and eating disorders.</li> </ul>
<p><b>1.13 Explain</b> the importance of hydration to support physical activity and health.</p>	<ul style="list-style-type: none"> <li>• Fluid requirements for different activity levels and environment.</li> <li>• Risks of dehydration.</li> <li>• Signs of dehydration.</li> <li>• Fluid sources for optimal hydration (including food sources containing water).</li> <li>• Benefits, limitations, and suitability of different types of sports drinks (iso, hypo and hypertonic).</li> <li>• Hydration requirements for different goals.</li> </ul>
<p><b>1.14 Explain</b> how portion sizes impact nutrient and energy intake.</p>	<ul style="list-style-type: none"> <li>• Eatwell guide recommendations and British Nutrition Foundation (BNF) resources on portion sizes.</li> <li>• Effects of altering portion sizes on health, energy and nutrient intake.</li> <li>• With consideration to: <ul style="list-style-type: none"> <li>○ energy balance equation (see 2.2)</li> <li>○ interpreting food labels to guide healthy eating.</li> </ul> </li> </ul>
<p><b>1.15 Consider</b> the impact of different food preparation and cooking techniques on nutrition and healthy eating.</p>	<ul style="list-style-type: none"> <li>• Food preparation techniques and hygiene considerations.</li> <li>• Different cooking techniques, e.g. steaming, grilling, baking, frying etc.</li> <li>• The impact of the above on nutrition and healthy eating guidelines.</li> </ul>

<p><b>1.16 Evaluate</b> the limitations and risks of weight loss and fad diets.</p>	<ul style="list-style-type: none"> <li>• The importance of communicating risks of diets to clients: <ul style="list-style-type: none"> <li>○ Health and performance implications of diets that encourage severe energy restriction.</li> <li>○ How nutritional intake can influence the actions of certain metabolic hormones.</li> <li>○ Short and long-term health risks of calorie restricted or macronutrient restricted diets.</li> <li>○ The impact of yo-yo dieting.</li> <li>○ Emphasising the impact of advertising and the few success stories that are highlighted.</li> <li>○ Long-term impact on hormonal and metabolic regulation.</li> <li>○ Psychological impact of weight loss and weight gain and its impact on day-to-day life, e.g. lethargy, mood swings, emotional distress etc.</li> <li>○ Provide basic information on thermodynamics and the essence of every diet.</li> </ul> </li> </ul>
<p><b>1.17 Explain</b> the importance of regular eating patterns for a healthy and balanced diet</p>	<ul style="list-style-type: none"> <li>• Examples of different eating patterns and habits amongst individuals and groups.</li> <li>• The importance of maintaining regular eating patterns for a healthy and balanced diet.</li> </ul>
<p><b>1.18 Describe</b> the health risks of excess alcohol.</p>	<ul style="list-style-type: none"> <li>• Alcohol content and units in common measures.</li> <li>• Effects of excess intake on health.</li> <li>• Calorific value of alcohol (<b>7kcal/g</b>) and the contribution of alcohol to energy intake (kJ/kcal).</li> </ul> <p>Refer to responsible drinking guidelines – see Appendix 1: Information sources.</p>
<p><b>1.19 Explain</b> limits of safe practice when recommending dietary supplements (and performance aids).</p>	<ul style="list-style-type: none"> <li>• Evidence and limitations/risks related to the use of dietary supplements (and performance aids).</li> <li>• Conflicts of interest surrounding sale of dietary supplements (and performance aids) within the workplace.</li> <li>• See Appendix 1: Information sources.</li> </ul>

## 2. Understand how to collect, analyse and use information relating to nutrition and health

<p><b>2.1 Outline</b> how to educate and encourage clients to make healthy food choices, including the use of food labelling.</p>	<ul style="list-style-type: none"><li>• Use of appropriate communication methods.</li><li>• Provide evidence-based information within own scope.</li><li>• Know when, how and who to signpost clients to for more information.</li><li>• The role of recognised nutrition professionals.</li><li>• Protocols for the communication of nutrition information across the workforce.</li><li>• Nutritional requirements for different goals, e.g. fat loss, weight loss, performance, hypertrophy.</li><li>• How food label information can be used to support healthy eating.</li><li>• Consideration to lifestyle management and client motivation and communication skills.</li></ul>
<p><b>2.2 Explain</b> how to calculate the energy requirements of individuals to support a balanced diet.</p>	<ul style="list-style-type: none"><li>• How energy requirements can vary depending on age, gender and activity level.</li><li>• Methods of estimating resting metabolic rate and energy requirements:<ul style="list-style-type: none"><li>○ resting metabolic rate (RMR) or basal metabolic rate (BMR) – Schofield formula etc.</li></ul></li><li>• How to estimate energy requirements based on physical activity levels and other relevant factors:<ul style="list-style-type: none"><li>○ Harris–Benedict equation (BMR x physical activity factor)</li><li>○ physical activity factor:<ul style="list-style-type: none"><li>- BMR x 1.4 inactive men and women (this applies to most people in the UK).</li><li>- BMR x 1.6 moderately active women.</li><li>- BMR x 1.7 moderately active men.</li><li>- BMR x 1.8 very active women.</li><li>- BMR x 1.9 very active men.</li></ul></li></ul></li><li>• The nutritional requirements and the hydration needs of clients engaged in physical activity.</li><li>• Nutritional and hydration requirements for different goals.</li><li>• The effect of different types of training on the production of fuel for exercise.</li><li>• Energy balance and the importance of maintaining a balanced diet that follows healthy eating guidelines.</li></ul>

	<ul style="list-style-type: none"> <li>• Components of energy expenditure and the energy balance equation: <ul style="list-style-type: none"> <li>○ Weight gain – a calorie surplus whereby energy in is greater than energy out.</li> <li>○ Weight loss – a calorie deficit whereby energy in is less than energy out.</li> <li>○ Weight maintenance – a calorie equality whereby energy in is equal to energy out.</li> </ul> </li> <li>• How to support individuals and groups to alter energy intake to support body weight goals and when to refer on.</li> <li>• Energy requirements to support the achievement of client goals.</li> </ul>
<p><b>2.3 Evaluate</b> nutritional assessment tools used for educating and encouraging clients to make healthier food choices.</p>	<ul style="list-style-type: none"> <li>• The uses, benefits and limitations (validity and reliability) of various dietary records and nutritional assessment tools: <ul style="list-style-type: none"> <li>○ food diary</li> <li>○ food recall</li> <li>○ food frequency questionnaires</li> <li>○ body composition assessment</li> <li>○ technology</li> <li>○ Eatwell guide.</li> </ul> </li> </ul>
<p><b>2.4 Explain</b> how to interpret information gained from methods used to assess body composition and health risk in relation to weight.</p>	<ul style="list-style-type: none"> <li>• How to accurately measure body composition.</li> <li>• How different measures relate to nutritional intake.</li> <li>• The benefits and limitations of different measures: <ul style="list-style-type: none"> <li>○ Norm chart for body fat percentage and skinfold data - see American College of Sports Medicine (ACSM) in references.</li> <li>○ World Health organisation (WHO) healthy ranges of body fat percentage, waist circumference and body mass index (BMI).</li> </ul> </li> <li>• How to sensitively communicate information to clients.</li> </ul>
<p><b>2.5 Explore</b> general strategies to support behaviour change to meet healthy eating guidelines.</p>	<ul style="list-style-type: none"> <li>• Transtheoretical model – stages and processes to support individuals at each stage.</li> <li>• Relevant strategies at different stages, e.g. decisional balance, encouragement, goal setting, rewards.</li> <li>• Communication skills to support individuals at different stages: <ul style="list-style-type: none"> <li>○ Pre-contemplation: <ul style="list-style-type: none"> <li>- Establish rapport and build trust.</li> </ul> </li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>- Explore the pros and cons of maintaining current lifestyle.</li> <li>- Explore the meaning of the actions the client undertakes.</li> <li>○ Contemplation: <ul style="list-style-type: none"> <li>- Start to change the extrinsic motivations to intrinsic ones.</li> <li>- Elicit self-motivational statements of intent and commitment from the client.</li> <li>- Provoke ideas regarding the client’s perceived self-efficacy and expectations regarding treatment.</li> </ul> </li> <li>○ Preparation: <ul style="list-style-type: none"> <li>- Offer a menu of options for change.</li> <li>- Help the client enlist social support.</li> <li>- Prompt what has worked in the past, either for the client or others they know.</li> </ul> </li> <li>○ Action: <ul style="list-style-type: none"> <li>- Support a realistic view of change through small steps.</li> <li>- Assist the clients in finding new reinforcers of positive change.</li> <li>- Acknowledge difficulties for the client in the early stages of change.</li> </ul> </li> <li>○ Maintenance <ul style="list-style-type: none"> <li>- Affirm the client’s resolve and self-efficacy.</li> <li>- Maintain supportive contact.</li> <li>- Review long-term goals with the client.</li> </ul> </li> </ul>
<p><b>2.6 Explain</b> professional role boundaries and when and how to signpost clients.</p>	<ul style="list-style-type: none"> <li>● Scope of practice: <ul style="list-style-type: none"> <li>○ General analysis of food diary.</li> <li>○ Educating on the process of healthy eating (see 2.2).</li> <li>○ Provide recommendations to ensure client fits into ‘healthy eating guidelines’.</li> <li>○ Feedback on popular mainstream diets and analysis of their pros and cons.</li> <li>○ Provide guidance on creating a calorie deficit or a calorie surplus.</li> </ul> </li> <li>● Role boundaries:</li> </ul>

	<ul style="list-style-type: none"> <li>○ Refer to experienced practitioner when client requests specific support based on: <ul style="list-style-type: none"> <li>- Client presents with an eating disorder.</li> <li>- Client presents with an alcohol addiction.</li> <li>- Client presents with a medically controlled condition linked to nutrition, e.g. diabetes.</li> <li>- Client wants a specifically prescribed meal plan.</li> </ul> </li> <li>● When and how to signpost/refer.</li> <li>● Range of professionals (ANutr, RNutr, RD).</li> <li>● Credible sources of nutritional information (see Appendix 1: Information sources).</li> </ul>
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<b>3. Be able to collect and analyse nutritional information and make appropriate recommendations</b>	
<b>3.1 Use</b> appropriate nutritional assessment tools to identify clients' dietary habits.	See 2.3.
<b>3.2 Analyse</b> client's dietary habits and identify areas for improvement within scope of practice.	<ul style="list-style-type: none"> <li>● Importance of informed consent prior to gathering information.</li> <li>● Using appropriate tools.</li> <li>● Information to gather from clients: <ul style="list-style-type: none"> <li>○ goals of the client</li> <li>○ general physical activity levels</li> <li>○ food likes and dislikes</li> <li>○ any allergies</li> <li>○ any cultural or religious food restrictions</li> <li>○ timing of food intake</li> <li>○ quantity of food intake</li> <li>○ specific macronutrient content</li> <li>○ any additional supplementation</li> <li>○ any medication being undertaken</li> <li>○ water, caffeine and alcohol intake.</li> </ul> </li> <li>● Provision of information within scope of practice (see Appendix 2: AfN code of practice).</li> </ul>
<b>3.3 Apply appropriate strategies</b> to educate and encourage clients	<ul style="list-style-type: none"> <li>● See 2.5.</li> <li>● Use of appropriate lifestyle and behaviour change models.</li> </ul>



about healthy eating within scope of practice and current government guidelines.	<ul style="list-style-type: none"> <li>• Use of appropriate communication skills.</li> </ul>
<b>3.4 Distinguish</b> between credible and non-credible sources of nutritional information and guidance.	<ul style="list-style-type: none"> <li>• See Appendix 1: Information sources.</li> </ul>
<b>3.5 Provide</b> clients with appropriate information and/or signposting according to their individual health and nutrition needs.	<ul style="list-style-type: none"> <li>• See 1 and 2.</li> <li>• See Appendix 2: AfN code of practice.</li> </ul>
<b>3.6 Maintain records</b> in accordance with appropriate legislation.	<ul style="list-style-type: none"> <li>• Data protection / general data protection regulation (GDPR).</li> </ul>

# Structure and function of the digestive system K/650/7239

## Unit aim

The aim of this unit is to provide learners with the knowledge and understanding of the structure and function of the digestive system and digestive processes.

## Content

### 1. Understand the structure and functions of the digestive system

<b>1.1 Describe</b> the function of the digestive system.	Breakdown of food into nutrients such as carbohydrates, fats and proteins so they can then be absorbed into the bloodstream for energy, growth and repair. <ul style="list-style-type: none"><li>• Ingestion</li><li>• Digestion</li><li>• Absorption</li><li>• Excretion</li></ul>
<b>1.2 Summarise</b> the function of each of the main structures within the digestive system	Alimentary canal / gastrointestinal (GI) tract comprises: <ul style="list-style-type: none"><li>• Mouth (tongue, teeth, salivary glands):<ul style="list-style-type: none"><li>○ Mastication (mechanical breakdown of food, i.e. chewing).</li><li>○ Moistening (softening of food with saliva).</li><li>○ Emulsification by enzymes contained in saliva</li></ul></li><li>• Pharynx (throat):<ul style="list-style-type: none"><li>○ Permits the passage of swallowed solids and liquids into the oesophagus, i.e. swallowing.</li></ul></li><li>• Oesophagus:<ul style="list-style-type: none"><li>○ Muscular tube that connects the pharynx (throat) to the stomach. It contracts with a peristaltic (wave like) action to move food toward the stomach.</li></ul></li><li>• Stomach:<ul style="list-style-type: none"><li>○ Acts as a food reservoir whilst it is being further broken down:<ul style="list-style-type: none"><li>- mechanically by peristalsis</li></ul></li></ul></li></ul>

	<ul style="list-style-type: none"> <li>- chemically by enzymes such as pepsin, those produced by the pancreas (see below) and hydrochloric acid.</li> <li>• Pancreas: <ul style="list-style-type: none"> <li>○ Secretes further enzymes to assist with the additional breakdown of food'</li> </ul> </li> <li>• Liver: <ul style="list-style-type: none"> <li>○ Produces and secretes bile which aids in the emulsification of fats.</li> </ul> </li> <li>• Gallbladder and bile ducts: <ul style="list-style-type: none"> <li>○ Stores bile.</li> </ul> </li> <li>• Small intestine: <ul style="list-style-type: none"> <li>○ Where the absorption of digested nutrients into the blood stream occurs: <ul style="list-style-type: none"> <li>- villi and microvilli – the inner surface folds and finger-like projections that provide a large surface area in the small intestine to allow for effective absorption.</li> </ul> </li> </ul> </li> <li>• Large intestine (colon): <ul style="list-style-type: none"> <li>○ Absorbs water and uses fibre to solidify any unabsorbed products to enable peristalsis to expel the resultant stool(s) via the rectum.</li> </ul> </li> </ul>
<p><b>1.3 Describe</b> the digestive process</p>	<p>How the main nutrient groups are broken down and absorbed.</p> <ul style="list-style-type: none"> <li>• The transport, storage and metabolised forms of each macronutrient</li> <li>• The inability of the body to absorb or use large particles of food, therefore using a process of digestion to break these down into smaller components which can be more easily absorbed and transported.</li> <li>• Macronutrient digestive end products: <ul style="list-style-type: none"> <li>○ carbohydrates are digested and absorbed as sugars.</li> <li>○ fats are digested and absorbed as fatty acids.</li> <li>○ proteins are digested and absorbed as amino acids.</li> </ul> </li> <li>• Digestive enzymes – location of release and affected nutrients: <ul style="list-style-type: none"> <li>○ carbohydrate – mouth – salivary amylase</li> <li>○ protein – stomach – pepsin</li> </ul> </li> </ul>

- fat – released from the pancreas into the small intestine – lipase.
- protein – released from the pancreas into the small intestine – trypsin.

The role of fibre in the digestive process:

- Soluble fibre may reduce cholesterol in the blood and can reduce constipation.
- Sources of soluble fibre (fruit, vegetables, oats, golden linseeds).
- Insoluble fibre or non-starch polysaccharide (NSP) passes through the gut without being broken down and keeps the bowels healthy.
- Sources include root vegetables, nuts and seeds, oats, fruit, cereals and wholemeal bread.
  - The importance of fluid intake:
  - Chemical reactions in all cells take place in water.
  - Assisting the removal of waste from the body
  - Transportation and absorption of nutrients around the body
  - Preventing constipation

Timescales for the digestive process to take place.

- Initially, food will travel relatively quickly through the digestive system.
- Takes about 6 to 8 hours for food to pass through the stomach and small intestine. Food then enters the large intestine (colon) for further digestion, absorption of water and, finally, elimination of undigested food.
- In the large intestine, partially digested food can sit for more than a day while it's broken down even more (depends on type of food, e.g. processed foods digested quicker).
  - meat and fish can take as long as 2 days to fully digest due to the complex protein and fat molecules.
  - fruit and vegetables which contain fibre move through the digestive system in less than a day.
  - processed foods can be digested in a matter of hours
- Can take 24 to 72 hours to move through the digestive tract
- The exact time of digestive processes will depend on the amounts and types of foods eaten and other factors such as

	gender, metabolism and any digestive issues that could slow down or speed up the process.
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# Applied nutrition for exercise, sport, and athletic performance (K/650/6220)

## Unit aim

To provide the knowledge and understanding to be able to apply the key principles of nutrition and healthy eating to support performance in exercise, sport, and athletic events.

Learners will be able to apply evidence-based guidance on fuelling for performance, weight management, immune health, gut health, and the nutritional requirements before, during and after participation in different types of exercise and sporting activities.

## Content

### 1. Understand the physiological demands of different sports and athletic events

<p><b>1.1 Describe</b> the physiological demands of different types of exercise, sport, and athletic events.</p>	<ul style="list-style-type: none"><li>• Exercise, sport and athletic demands and specificity:<ul style="list-style-type: none"><li>○ The different types of exercise and physical activity.</li><li>○ Different types of sports/events, e.g. team, individual, land, water, equestrian, racquet, track and field etc.</li><li>○ Level of competition, e.g. recreation, amateur, Olympic, Paralympic etc.</li><li>○ Other variables:<ul style="list-style-type: none"><li>- intensity and duration</li><li>- muscle and joint action</li><li>- motor skills, i.e. power, balance, coordination, reaction time, speed, agility</li><li>- muscle fibre type and energy systems.</li></ul></li></ul></li></ul>
<p><b>1.2 Explain</b> how the different energy systems interact during different types of exercise, sports and athletic events.</p>	<ul style="list-style-type: none"><li>• The substrates which fuel each energy system to generate Adenosine Triphosphate (ATP):<ul style="list-style-type: none"><li>○ substrates:<ul style="list-style-type: none"><li>- carbohydrate</li><li>- fat</li><li>- protein.</li></ul></li><li>○ energy systems:<ul style="list-style-type: none"><li>- creatine phosphate</li><li>- glycogen</li></ul></li></ul></li></ul>

	<ul style="list-style-type: none"> <li>- oxygen.</li> <li>• Different types of sports and athletic events (see 1.1): <ul style="list-style-type: none"> <li>○ aerobic and anaerobic metabolism.</li> </ul> </li> <li>• Physiological demands that affect energy requirements (aerobic and anaerobic), such as: <ul style="list-style-type: none"> <li>○ intensity</li> <li>○ duration</li> <li>○ individual factors, e.g. age, fitness, skill, experience, level of competition, and diet.</li> </ul> </li> </ul>
<p><b>1.3 Explain</b> methods to estimate energy expenditure for different types of exercise, sports and athletic events.</p>	<ul style="list-style-type: none"> <li>• The use of tracking technology.</li> <li>• Metabolic equivalents (METs).</li> </ul>

2. Understand fuelling for performance	
<p><b>2.1 Explain</b> how the bioavailability of carbohydrates affects performance.</p>	<ul style="list-style-type: none"> <li>• Exercise, sport, and athletic performance.</li> <li>• Recap of level three content including: <ul style="list-style-type: none"> <li>○ The role of carbohydrate.</li> <li>○ Calorific/energy density or value.</li> <li>○ Food sources.</li> <li>○ Types of carbohydrate.</li> <li>○ How carbohydrates are stored.</li> <li>○ Recommended intake requirements and how excess requirements are stored.</li> </ul> </li> <li>• The timing and type of carbohydrate intake before, during and after exercise/sport (determined by intensity and duration).</li> <li>• When to consume carbohydrate during sport/exercise.</li> <li>• Fasted training.</li> <li>• Pre and post exercise/sports meals and snacks.</li> <li>• Carbohydrates and recovery.</li> <li>• Different types of events, e.g. endurance, resistance, long and short duration.</li> <li>• Carbohydrate periodisation.</li> </ul>
<p><b>2.2 Explain</b> the use of carbohydrate loading for</p>	<ul style="list-style-type: none"> <li>• Definition of carbohydrate loading.</li> <li>• Aims and purpose of carbohydrate loading.</li> </ul>

<p>athletic and sports performance.</p>	<ul style="list-style-type: none"> <li>• Which athletes and sports people may benefit, and which may not.</li> <li>• How to assess the effect of carbohydrate loading on performance, e.g. for endurance athletes.</li> <li>• When to use carbohydrate loading.</li> <li>• Examples of carbohydrate loading.</li> <li>• Effects of weight gain (glycogen storage).</li> </ul>
<p><b>2.3 Explain</b> the glycaemic index and its use within sports and athletic performance.</p>	<ul style="list-style-type: none"> <li>• Definition of terms: <ul style="list-style-type: none"> <li>○ glycaemic index</li> <li>○ glycaemic load.</li> </ul> </li> <li>• How it's used in athletic and sports performance.</li> <li>• Glycaemic response in athletes.</li> </ul>
<p><b>2.4 Explain</b> how the bioavailability of protein affects performance.</p>	<ul style="list-style-type: none"> <li>• Exercise, sport, and athletic performance.</li> <li>• Recap level three content including: <ul style="list-style-type: none"> <li>○ The role of protein.</li> <li>○ Calorific/energy density or value.</li> <li>○ Food sources.</li> <li>○ Types of protein.</li> <li>○ How proteins are stored.</li> <li>○ Recommended intake requirements and how excess requirements are stored.</li> </ul> </li> <li>• Endurance and strength events.</li> <li>• Optimising protein synthesis for athletic performance, including the effects of leucine.</li> <li>• Protein before and after sport.</li> <li>• Protein intake per meal.</li> <li>• Protein and satiety.</li> </ul>
<p><b>2.5 Explain</b> how the bioavailability of fat affects performance.</p>	<ul style="list-style-type: none"> <li>• Exercise, sport, and athletic performance.</li> <li>• Recap level three content including: <ul style="list-style-type: none"> <li>○ The role of fat</li> <li>○ Calorific/energy density or value</li> <li>○ Food sources.</li> <li>○ Types of fat</li> <li>○ How fats are stored</li> <li>○ Recommended intake requirements</li> <li>○ How excess calorific requirements are stored.</li> </ul> </li> </ul>



	<ul style="list-style-type: none"> <li>• How the body uses fat during exercise and sport (fat metabolism: triacylglycerols to free fatty acids [FFA])</li> <li>• Omega 3 and 6 fatty acids and performance, including best sources.</li> <li>• Effects on performance of excess adipose tissue, i.e. how sub-optimal weight affects performance.</li> </ul>
<b>2.6 Explain</b> how vitamins and minerals affect performance.	<ul style="list-style-type: none"> <li>• Exercise, sport, and athletic performance.</li> <li>• Recap of level three content, e.g. role of different vitamins and minerals, food sources, recommended intake requirements.</li> <li>• The effects of exercise/sport on reactive oxygen species (ROS).</li> <li>• The benefits and limitations of vitamin and mineral supplements.</li> <li>• The risks of imbalances linked with vitamin and mineral supplements.</li> </ul>
<b>2.7 Explain</b> how to adapt nutrition recommendations to meet different performance requirements.	<ul style="list-style-type: none"> <li>• Exercise, sport, and athletic performance.</li> <li>• The use and application of evidence-based information.</li> <li>• The use and application of healthy eating guidelines (Eatwell guide).</li> <li>• Education on food groups and sources of nutrients.</li> <li>• Review and education of eating patterns (frequency and timings of meals and snacks).</li> <li>• Review and education of portion sizes of meals, snacks and drinks.</li> <li>• Energy consumption during exercise, sports and athletic events.</li> <li>• The use of ergogenic aids such as energy gels.</li> <li>• The use of sports supplements such as protein powders.</li> <li>• Interpretation of food labels.</li> <li>• Review and advice on food preparation and cooking techniques.</li> <li>• Scope of practice and when to refer.</li> </ul>

### 3. Understand body composition and weight management in relation to sports and athletic performance

<b>3.1 Explain</b> how to estimate the energy	<ul style="list-style-type: none"> <li>• Exercise, sport, and athletic performance.</li> <li>• According to: <ul style="list-style-type: none"> <li>○ Energy demands of different types of sports</li> </ul> </li> </ul>
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<p>requirements (kJ/kcal) of individuals.</p>	<ul style="list-style-type: none"> <li>○ Individual factors that affect energy requirements, e.g. age, gender, and activity level.</li> <li>○ Environment (climate, altitude and temperature).</li> <li>● Different methods to measure energy requirements.</li> <li>● How to calculate basal metabolic rate (BMR)/resting metabolic rate (RMR): <ul style="list-style-type: none"> <li>○ BMR is an individual's basic requirement of energy at rest. This energy will be adequate to maintain the body's basic function without any movement.</li> <li>○ See Mifflin-St Jeor equation for BMR.</li> <li>○ See Schofield formula.</li> </ul> </li> <li>● The effectiveness of different methods for calculating BMR/RMR: <ul style="list-style-type: none"> <li>○ Harris–Benedict equation (BMR x physical activity factor).</li> <li>○ Physical activity factor: <ul style="list-style-type: none"> <li>- BMR x 1.4 inactive men and women (this applies to most people in the UK)</li> <li>- BMR x 1.6 moderately active women</li> <li>- BMR x 1.7 moderately active men</li> <li>- BMR x 1.8 very active women</li> <li>- BMR x 1.9 very active men.</li> </ul> </li> </ul> </li> </ul>
<p><b>3.2 Evaluate</b> methods for measuring and monitoring body mass index, body composition and energy expenditure.</p>	<ul style="list-style-type: none"> <li>● Advantages and disadvantages, accuracy, limitations, and suitability of <b>measuring</b> body composition: <ul style="list-style-type: none"> <li>○ DEXA</li> <li>○ infra-red</li> <li>○ body stat measurements – bioelectrical impedance</li> <li>○ skin fold calliper measurements.</li> </ul> </li> <li>● Advantages and disadvantages, accuracy, limitations, and suitability of <b>monitoring</b> body composition: <ul style="list-style-type: none"> <li>○ body mass index (BMI)</li> <li>○ waist circumference</li> <li>○ waist to hip ratio.</li> </ul> </li> <li>● Interpretation of information provided by different measures.</li> <li>● How these measures relate to nutritional intake.</li> <li>● How to compare results to norm tables and government guidelines.</li> </ul>
<p><b>3.3 Explain</b> the physiological impacts of</p>	<ul style="list-style-type: none"> <li>● How the body stores energy from different macronutrients (glycogen and fat stores).</li> </ul>

<p>weight loss and weight gain on sports and athletic performance.</p>	<ul style="list-style-type: none"> <li>• Correlation of health risk associated with weight gain and weight loss: <ul style="list-style-type: none"> <li>○ ACSM guidance</li> <li>○ NICE guidance</li> <li>○ BMI classifications</li> <li>○ waist circumference classifications.</li> </ul> </li> <li>• Classifications for BMI and waist circumference in relation to disease risk, according to the NICE risk categories.</li> <li>• Energy availability (EA) and the risks of low EA, including: <ul style="list-style-type: none"> <li>○ the female athlete TRIAD (3 clinical entities: menstrual dysfunction, low energy availability (with or without an eating disorder), and decreased bone mineral density (BMD))</li> <li>○ relative energy deficiency in sports – RED-S).</li> </ul> </li> </ul>
<p><b>3.4 Evaluate</b> the effectiveness of the energy balance equation in supporting weight management.</p>	<ul style="list-style-type: none"> <li>• Energy balance equation is the relationship between calories in and calories out (CICO): <ul style="list-style-type: none"> <li>○ Weight gain - a calorie surplus whereby energy/calories in is greater than energy/calories out.</li> <li>○ Weight loss - A calorie deficit whereby energy/calories in is less than energy/calories out.</li> <li>○ Weight maintenance - A calorie equality whereby energy/calories is equal to energy/calories out</li> </ul> </li> <li>• Factors which affect energy balance.</li> <li>• Hormones associated with energy balance.</li> <li>• The importance of healthy eating guidelines.</li> <li>• How to alter energy intake to support body weight goals.</li> <li>• The relationship between nutrition, body composition and health and disease risk factors, and how this information can be used to guide food choice in relation to healthy eating guidelines.</li> <li>• The importance of maintaining a balanced diet that follows healthy eating guidelines when supporting individuals and groups to alter energy intake to support body weight goals and when to refer on.</li> <li>• When to refer to other professionals.</li> </ul>
<p><b>3.5 Describe</b> the components of energy expenditure and their effects on weight management.</p>	<ul style="list-style-type: none"> <li>• Components of total daily energy expenditure (TDEE) - Adapted from Maclean et al. (2011). See Appendix 1: Information Sources – ResearchGate source: <ul style="list-style-type: none"> <li>○ BMR = basal metabolic rate</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>○ NEAT = non-exercise activity thermogenesis</li> <li>○ TEF = thermic effect of food</li> <li>○ EAT = exercise activity thermogenesis</li> <li>○ REE = resting energy expenditure</li> <li>○ NREE = non-resting energy expenditure.</li> <li>○ RMR = resting metabolic rate</li> <li>○ MET = metabolic equivalent of task</li> <li>● Energy expenditure during physical activity, exercise, and sport.</li> <li>● Energy expenditure after physical activity, exercise, and sport.</li> <li>● The importance of maintaining a balanced diet that follows healthy eating guidelines when supporting individuals to alter energy intake to support body weight goals.</li> <li>● The relationship between nutrition, body composition and health and disease risk factors, and how this information can be used to guide food choice in relation to healthy eating guidelines.</li> <li>● When to refer on for specialist support, e.g. eating disorders, obesity.</li> </ul>
<p><b>3.6 Explain</b> the impact which different types of food and beverages have on weight management.</p>	<ul style="list-style-type: none"> <li>● Considering the following types of food and nutrition: <ul style="list-style-type: none"> <li>○ 'junk' food</li> <li>○ fast food</li> <li>○ ready-made meals</li> <li>○ diet foods and produce</li> <li>○ nutritionally empty foods and beverages (including alcohol)</li> <li>○ caffeine consumption.</li> </ul> </li> <li>● The relationship between nutrition, body composition and health and disease risk factors, and how this information can be used to guide food choice in relation to healthy eating guidelines.</li> </ul>
<p><b>3.7 Explain</b> factors that affect weight management.</p>	<ul style="list-style-type: none"> <li>● Sleep deprivation: <ul style="list-style-type: none"> <li>○ For adults and children.</li> <li>○ Links with leptin, ghrelin, and sleep duration.</li> </ul> </li> <li>● Stress: <ul style="list-style-type: none"> <li>○ Visceral obesity.</li> <li>○ Physiology of the hypothalamic-pituitary-adrenal (HPA) axis and its relation to obesity and exercise.</li> </ul> </li> <li>● Effects of obesogenic environment.</li> </ul>

	<ul style="list-style-type: none"> <li>• The sum of influences that the surroundings, opportunities, or conditions of life have on promoting obesity in individuals or populations.</li> <li>• Environments that promote high energy intake and sedentary behaviour.</li> <li>• The relationship between nutrition, body composition and health and disease risk factors, and how this information can be used to guide food choice in relation to healthy eating guidelines.</li> </ul>
<p><b>3.8 Explain</b> the effect of nutritional intake on different metabolic hormones.</p>	<ul style="list-style-type: none"> <li>• Effects of calorie restricted diets: <ul style="list-style-type: none"> <li>○ Increased mitochondrial efficiency, less calories burned for the same energy output.</li> <li>○ Decrease in circulating thyroid hormones.</li> <li>○ Reduction in testosterone, leptin, insulin and IGF-1 levels in the blood.</li> <li>○ Increase in catecholamines, glucagon and ghrelin.</li> </ul> </li> <li>• Effects of carbohydrate restricted diets: <ul style="list-style-type: none"> <li>○ Ketosis (advantages/disadvantages benefits/risks).</li> <li>○ Effects on nervous system (brain fog etc).</li> </ul> </li> </ul>
<p><b>3.9 Describe</b> the nutritional requirements for different physiological and performance goals which are based upon body composition and weight management.</p>	<ul style="list-style-type: none"> <li>• Fat loss: <ul style="list-style-type: none"> <li>○ Creating a calorie deficit.</li> <li>○ Reduction in carbohydrate intake to elicit greater fat usage.</li> <li>○ Greater level of protein intake to prevent muscle atrophy.</li> <li>○ Higher levels of physical activity in particular resistance training and high intensity cardiovascular activity.</li> </ul> </li> <li>• Weight loss: <ul style="list-style-type: none"> <li>○ Creating a calorie deficit.</li> <li>○ No unnecessary tweaking of macronutrient contribution as long as a calorie deficit exists.</li> </ul> </li> <li>• Hypertrophy: <ul style="list-style-type: none"> <li>○ Creating a calorie surplus.</li> <li>○ Increased protein intake to build and repair damaged tissue.</li> <li>○ Maintaining carbohydrate intake in order for insulin to transport glucose and amino acids to the muscles.</li> </ul> </li> <li>• Sports performance: <ul style="list-style-type: none"> <li>○ Sport dependant: possible alterations to diet including carbohydrate restriction, carbohydrate loading, high protein diets, calorie surplus for gaining size, calorie</li> </ul> </li> </ul>

	<p>deficit for reducing weight (sports dependant on 'making weight').</p> <ul style="list-style-type: none"> <li>○ When to refer for more specialist advice and support.</li> <li>● Also see 3.4.</li> </ul>
<p><b>3.10 Explain</b> the risks which poor nutrition has on sporting and exercise performance.</p>	<ul style="list-style-type: none"> <li>● Risks of both over and under nutrition.</li> <li>● Individuals at risk, such as sports and events where weight control is important, e.g. boxing, gymnastics, body building etc.</li> <li>● Risks for all genders.</li> <li>● Risks of regular weight loss and effects on resting metabolic rate.</li> <li>● Risks of dieting and importance of communicating risks: <ul style="list-style-type: none"> <li>○ Diets: <ul style="list-style-type: none"> <li>- low carbohydrate diets</li> <li>- low fat diets</li> <li>- time restricted diets.</li> </ul> </li> <li>○ Ketones and ketosis.</li> <li>○ Healthy weight management.</li> <li>○ Short and long-term health risks of calorie restricted or macronutrient restricted diets.</li> <li>○ The impact of yo-yo dieting.</li> <li>○ Long-term impact of dieting on hormonal and metabolic regulation.</li> <li>○ Psychological impact of weight loss and weight gain and its impact on day-to-day life, e.g. lethargy, mood swings, emotional distress etc.</li> <li>○ Thermodynamics and the essence of every diet.</li> <li>○ 'Adaptive thermogenesis' and 'metabolic adaptation'.</li> </ul> </li> <li>● Energy availability (EA) and the risks of low EA: <ul style="list-style-type: none"> <li>○ Define energy availability.</li> <li>○ Causes of low energy availability.</li> <li>○ Athletes at greatest risk.</li> <li>○ Biological female athlete triad of conditions, i.e. low body weight (disordered eating), low bone density (osteopenia, osteoporosis), and irregular menstruation (amenorrhoea)</li> <li>○ Relative energy deficiency in sports (RED-S).</li> <li>○ Prevention and treatment of RED-S.</li> <li>○ How to identify RED-S:</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>- low energy availability in females questionnaire (LEAF-Q)</li> <li>- general anxiety disorder, GAD-7 questionnaire</li> <li>- SCOFF questionnaire for disordered eating.</li> <li>○ Effects and symptoms of RED-S on health and performance.</li> <li>● Signs and symptoms of disordered eating.</li> <li>● Signs and symptoms of eating disorders.</li> <li>● Anorexia nervosa: <ul style="list-style-type: none"> <li>○ Extreme thinness or weight loss</li> <li>○ False perception of one's own weight, i.e. think they are fat when they are actually extremely thin.</li> <li>○ Eating very little.</li> <li>○ Cold and bluish extremities.</li> <li>○ Obsessive weighing.</li> <li>○ Anxiety about food.</li> <li>○ Sleep disruption.</li> </ul> </li> <li>● Bulimia nervosa: <ul style="list-style-type: none"> <li>○ Tooth decay</li> <li>○ Puffy face</li> <li>○ Frequent weighing</li> <li>○ Stains around the toilet bowl</li> <li>○ Hiding food</li> <li>○ Secretive eating.</li> </ul> </li> <li>● When to refer individuals for specialist support and when to seek further information.</li> </ul>
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<b>4. Understand gut health for wellbeing and performance</b>	
<b>4.1 Explain</b> the effects of 'gut health' on wellbeing and performance.	<ul style="list-style-type: none"> <li>● Gut microbiota and their effects on health.</li> <li>● Differences in gut microbiota composition in athletes and general populations.</li> </ul>
<b>4.2 Explain</b> how exercise affects gut health.	<ul style="list-style-type: none"> <li>● Microbiome: microorganisms (such as fungi, bacteria, and viruses) that exist in a particular environment.</li> <li>● Effects on microbiomes in the gut.</li> <li>● 'Training the gut' for exercise.</li> </ul>

	<ul style="list-style-type: none"> <li>• Exercise induced alterations to composition and functional capacity of the gut microbiota.</li> <li>• Types of exercise to induce alterations to gut microbiota.</li> <li>• Intensity of exercise to induce alterations to gut microbiota.</li> <li>• Health benefits of exercise-induced alterations of the gut microbiota.</li> </ul>
<b>4.3 Explain</b> how diet affects gut health.	<ul style="list-style-type: none"> <li>• The role of probiotics.</li> <li>• How different food types (meat based/vegan/vegetarian diets etc) influence gut health.</li> <li>• What microbiomes are present.</li> <li>• Gut pH levels (and the effects this has on the microbiome environment).</li> <li>• Effects of processed foods.</li> <li>• Benefits of adequate fibre intake.</li> <li>• The effects of fermented foods on gut health.</li> <li>• Whole foods vs refined foods.</li> <li>• Plant based.</li> <li>• Diversity in the diet.</li> <li>• Chew rates.</li> </ul>
<b>4.4 Describe</b> signs and symptoms of gut problems.	<ul style="list-style-type: none"> <li>• Bloating</li> <li>• Constipation</li> <li>• Diarrhoea</li> <li>• Heartburn</li> <li>• Incontinence</li> <li>• Nausea and vomiting</li> <li>• Reflux</li> <li>• Loose bowel movements.</li> </ul>
<b>4.5 Explain</b> methods to improve gut health.	<ul style="list-style-type: none"> <li>• Adapting the diet: <ul style="list-style-type: none"> <li>○ Include probiotics in diet.</li> <li>○ Limit processed foods and sugar.</li> <li>○ Eat slowly and chew thoroughly to fully digest food to help absorb all its nutrients.</li> <li>○ Drink water as it aids with digestion.</li> <li>○ Fresh fruits and vegetables.</li> <li>○ Plant-based foods.</li> <li>○ Check for food intolerances.</li> </ul> </li> </ul>



	<ul style="list-style-type: none"> <li>• Mindful eating.</li> <li>• Exercise regularly: <ul style="list-style-type: none"> <li>○ Types and intensity of exercise.</li> </ul> </li> <li>• Get enough sleep.</li> <li>• Reduce and manage stress.</li> <li>• Avoid or quit smoking.</li> </ul>
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## 5. Understand immune health and recovery from injury

<b>5.1 Explain</b> what is meant by a 'healthy immune system'.	<ul style="list-style-type: none"> <li>• Components of the immune system</li> <li>• Risk factors for infection</li> <li>• How to reduce risk of infection</li> </ul>
<b>5.2 Explain</b> how to optimise immune health.	<ul style="list-style-type: none"> <li>• The effects of exercise on 'immune health'</li> <li>• The effects of diet and nutrition on 'immune health'</li> <li>• Vitamin C, D supplementation</li> <li>• Balance energy expenditure</li> </ul>
<b>5.3 Explain</b> how nutrition influences immunity and supports recovery from exercise and injury.	<ul style="list-style-type: none"> <li>• Role of macronutrients: <ul style="list-style-type: none"> <li>○ Protein (amino acids)</li> <li>○ Carbohydrates</li> <li>○ Fats (omega 3)</li> </ul> </li> <li>• Role of supplements: <ul style="list-style-type: none"> <li>○ Echinacea</li> <li>○ Glutamine</li> <li>○ Probiotics</li> <li>○ Zinc lozenges</li> <li>○ Polyphenols</li> <li>○ Vitamin C</li> <li>○ Vitamin D.</li> </ul> </li> </ul> <p>Also see unit: Supplements, performance aids and hydration for sports performance (L/650/6221).</p>

## 6. Understand nutritional requirements for exercise, sport, and competition

<b>6.1 Describe</b> nutritional requirements to assist in the preparation of	<ul style="list-style-type: none"> <li>• For exercise, sport, and athletic performance/competition.</li> <li>• Preparatory nutrition for competition: <ul style="list-style-type: none"> <li>○ In advance of event, such as:</li> </ul> </li> </ul>
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<p>exercise, sport and competition.</p>	<ul style="list-style-type: none"> <li>- 8–12 weeks before.</li> <li>- 24–48 hours before.</li> <li>• Preparatory meal timings and type: <ul style="list-style-type: none"> <li>○ Food choices, including carbohydrate intake and GI intake and effects on training and exercise.</li> </ul> </li> <li>• With consideration to different event/competition needs: <ul style="list-style-type: none"> <li>○ Endurance events, e.g. marathon running.</li> <li>○ Team sports, e.g. football.</li> <li>○ Making weight for competitions, e.g. boxing, judo, body building, power lifting etc.</li> <li>○ Short duration events, e.g. sprinting, power lifting.</li> </ul> </li> </ul>
<p><b>6.2 Describe</b> nutritional requirements to assist performance during exercise, sport and competition.</p>	<ul style="list-style-type: none"> <li>• For exercise, sport, and athletic performance/competition.</li> <li>• During and participatory/inter-sport nutrition: <ul style="list-style-type: none"> <li>○ Types and timing</li> <li>○ Solids and liquids.</li> </ul> </li> <li>• With consideration to different event/competition needs: <ul style="list-style-type: none"> <li>○ Endurance events, e.g. Marathon running</li> <li>○ Team sports, e.g. Football</li> <li>○ Making weight for competitions, e.g. Boxing, judo, body building, power lifting etc.</li> <li>○ Short duration events, e.g. Sprinting, power lifting.</li> </ul> </li> </ul>
<p><b>6.3 Describe</b> nutritional requirements to assist in the recovery from exercise, sport and competition.</p>	<ul style="list-style-type: none"> <li>• For exercise, sport, and athletic performance/competition.</li> <li>• Post nutrition refuelling process and how long it takes: <ul style="list-style-type: none"> <li>○ Use of high or low GI foods for recovery.</li> <li>○ Types of meals/snacks to support recovery and refuelling.</li> <li>○ Timing of meals to support recovery and refuelling.</li> </ul> </li> <li>• With consideration to different event needs: <ul style="list-style-type: none"> <li>○ Endurance events, e.g. Marathon running</li> <li>○ Team sports, e.g. Football</li> <li>○ Making weight for competitions, e.g. Boxing, judo, body building, power lifting etc.</li> <li>○ Short duration events, e.g. Sprinting, power lifting.</li> </ul> </li> </ul>

# Supplements, performance aids and hydration for sports performance (L/650/6221)

## Unit aim

To provide a deeper understanding of the risks, limitations and safe use of supplements and ergogenic substances and the importance of hydration.

Learners will understand dietary alternatives to using supplements and the role boundaries related to supplementation recommendation.

## Content

1. Understand the safe use of supplements and ergogenic substances for performance	
<p><b>1.1 Explain</b> what is meant by the terms 'sports supplements' and 'ergogenic substances'.</p>	<ul style="list-style-type: none"> <li>• Sports supplements – supplements to the regular diet that may improve health, wellbeing, and performance, such as:               <ul style="list-style-type: none"> <li>○ muscle building</li> <li>○ weight gain</li> <li>○ weight loss</li> <li>○ hydration and rehydration</li> <li>○ assist recovery</li> <li>○ manage nutrient deficiencies</li> <li>○ improve endurance.</li> </ul> </li> <li>• Ergogenic substances – external substances that enhance sporting performance, including:               <ul style="list-style-type: none"> <li>○ sports supplements.</li> </ul> </li> <li>• Illegal substances.</li> </ul>
<p><b>1.2 Explain</b> the evidence, uses, limitations and risks related to the use of dietary supplements and ergogenic substances as aids to performance.</p>	<ul style="list-style-type: none"> <li>• Legal and banned substances</li> <li>• Arginine</li> <li>• Antioxidant supplements</li> <li>• Branched chain amino acid supplements</li> <li>• Beta-alanine</li> <li>• Beetroot juice (nitrate)</li> <li>• Bicarbonate</li> </ul>

	<ul style="list-style-type: none"> <li>• Caffeine and ketogenic drinks</li> <li>• Cannabidiol (CBD)</li> <li>• Cherry Juice</li> <li>• Conjugated linoleic acid</li> <li>• Collagen</li> <li>• Colostrum</li> <li>• Creatine</li> <li>• Energy bars</li> <li>• Energy gels</li> <li>• Ephedrine/Ma huang/ <ul style="list-style-type: none"> <li>○ 'fat burners'/thermogenic supplements</li> </ul> </li> <li>• Glutamine</li> <li>• HMB (Beta hydroxy/beta methyl butyrate)</li> <li>• Hydrogel energy drinks</li> <li>• Ketones</li> <li>• Leucine</li> <li>• Omega 3 fatty acids</li> <li>• Polyphenols</li> <li>• Probiotics</li> <li>• Protein supplements</li> <li>• Prohormones/steroid precursors/testosterone boosters</li> <li>• Taurine</li> <li>• Zinc monomethionine aspartate (ZMA).</li> </ul> <p>See Appendix 1: Information sources:</p> <ul style="list-style-type: none"> <li>• WADA</li> <li>• Bean, A (2022)</li> </ul>
<p><b>1.3 Critically evaluate</b> the benefits of supplements and ergogenic substances in exercise, sports and athletic performance.</p>	<ul style="list-style-type: none"> <li>• For exercise, sport, and athletic performance.</li> <li>• Evidence behind widely used supplements.</li> <li>• When it may be appropriate to use supplements and when not.</li> <li>• Reasons for use: <ul style="list-style-type: none"> <li>○ to build muscle</li> <li>○ to gain weight</li> <li>○ to lose weight</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>○ to assist recovery</li> <li>○ to support rehydration</li> <li>○ to improve endurance</li> <li>○ to manage nutrient deficiencies.</li> <li>● Risks: <ul style="list-style-type: none"> <li>○ to career/reputation</li> <li>○ to health and wellbeing.</li> </ul> </li> <li>● With consideration to illegal substances/supplements: <ul style="list-style-type: none"> <li>○ The role of androgenic/anabolic steroids (AAS) – medical and illegal use, including different types (oral, injectable) esters used in AAS.</li> <li>○ AAS cycles, AAS stacks, different types of cycle and post-cycle therapy.</li> <li>○ Role of testosterone and how it can be enhanced.</li> <li>○ Effects and side effects.</li> </ul> </li> <li>● See Appendix 1: Information sources: <ul style="list-style-type: none"> <li>○ World Anti-Doping Agency (WADA) guidelines</li> <li>○ UK Anti-Doping (UKAD) guidance</li> <li>○ informed sport website</li> <li>○ cannabidiol (CBD) warning.</li> </ul> </li> </ul>
<p><b>1.4 Explain</b> scope of practice and conflicts of interest surrounding sports supplements and ergogenic substances to support performance.</p>	<ul style="list-style-type: none"> <li>● Limits of safe practice.</li> <li>● Conflicts of interest surrounding the sale of dietary supplements &amp; performance aids to support performance.</li> <li>● Conflicts within the sports coaching environment and workplace and how to manage these.</li> <li>● Role boundaries and limits of safe practice when recommending dietary supplements.</li> <li>● Awareness of UKAD guidance.</li> <li>● Awareness of substances that are evidenced as safe and illegal/banned substances.</li> </ul>
<p><b>1.5 Describe</b> dietary alternatives to the use of sports supplements and ergogenic substances to support performance.</p>	<ul style="list-style-type: none"> <li>● Whole foods.</li> <li>● Balanced dietary intake.</li> <li>● Regular meals.</li> <li>● The importance of seeking guidance from an appropriately qualified nutrition professional for specific dietary advice.</li> </ul>

## 2. Understand the role of hydration in exercise and sports performance

<p><b>2.1 Define</b> the terms:</p> <ul style="list-style-type: none"> <li>• Euhydration</li> <li>• Dehydration</li> <li>• Hypohydration</li> <li>• Hyperhydration.</li> </ul>	<ul style="list-style-type: none"> <li>• Euhydration – a state of normal hydration.</li> <li>• Dehydration – the process of losing water.</li> <li>• Hypohydration – a state of reduced body water, usually a deficit of &gt;2% of body weight.</li> <li>• Hyperhydration – a state of increased body water.</li> </ul>
<p><b>2.2 Explain</b> the benefits, limitations, and suitability of different types of sports drinks (iso, hypo and hypertonic).</p>	<ul style="list-style-type: none"> <li>• For exercise, sport, and athletic performance/competition.</li> <li>• Definitions and examples of: <ul style="list-style-type: none"> <li>○ Isotonic drinks – same concentration (carbohydrates and electrolytes) as body, e.g. fluid replacement and some energy drinks.</li> <li>○ Hypotonic drinks – lower concentration (carbohydrates and electrolytes) than body, e.g. ‘lite’ drinks</li> <li>○ Hypertonic drinks – higher concentration (carbohydrates and electrolytes) than body, e.g. fruit juices and colas.</li> </ul> </li> <li>• The function of electrolytes, e.g. sodium, potassium, magnesium.</li> <li>• Health risks associated with sports drinks, e.g. gut problems, and tooth decay.</li> <li>• When to use sports drinks: <ul style="list-style-type: none"> <li>○ Homemade iso, hypo and hypertonic sports drinks.</li> <li>○ Carbonated or still sports drinks.</li> </ul> </li> </ul>
<p><b>2.3 Explain</b> hydration recommendations and requirements when engaging in exercise and sport.</p>	<ul style="list-style-type: none"> <li>• For exercise, sport, and athletic performance/competition.</li> <li>• How much to drink to match sweat rates and limit dehydration.</li> <li>• Hydration: <ul style="list-style-type: none"> <li>○ Pre-exercise or event: <ul style="list-style-type: none"> <li>- Aim to drink 500ml of water in the two hours leading up your session. This will allow for adequate hydration and urination.</li> </ul> </li> <li>○ During the event: <ul style="list-style-type: none"> <li>- To ensure adequate hydration, aim to drink 120–180ml every 15 minutes. This is equivalent to a few gulps.</li> </ul> </li> <li>○ Post exercise or event:</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>- Aim to replace the fluid you have lost during the session plus half again to account for the thermal effect of exercise.</li> <li>• How to identify hypohydration: <ul style="list-style-type: none"> <li>○ Using the fluid calculator and sweat rates.</li> </ul> </li> <li>• Effect of sweat suits.</li> <li>• Fluid loading, including the use of glycerol – see WADA guidelines in Appendix 1: Information sources.</li> </ul>
<b>2.4 Explain</b> the effects of differing levels of dehydration.	<ul style="list-style-type: none"> <li>• Stages of dehydration.</li> <li>• Signs and symptoms of different stages.</li> <li>• Effects on health.</li> <li>• Effects on performance.</li> </ul>
<b>2.5 Explain</b> hydration and fluid intake guidelines for different activity levels and environments.	<ul style="list-style-type: none"> <li>• For exercise, sport, and athletic performance/competition: <ul style="list-style-type: none"> <li>○ a broad range of types/genres.</li> </ul> </li> <li>• The effects of different training environments: <ul style="list-style-type: none"> <li>○ indoor</li> <li>○ outdoor</li> <li>○ low temperature</li> <li>○ high temperature</li> <li>○ low altitude</li> <li>○ high altitude.</li> </ul> </li> <li>• Preparing for events in different environments.</li> </ul>
<b>2.6 Explain</b> the effects of alcohol on hydration, health, and sports performance.	<ul style="list-style-type: none"> <li>• The average alcohol content of common beverages.</li> <li>• Alcohol intake limits - responsible drinking guidelines.</li> <li>• The contribution of alcohol to energy intake (kJ/kcal) and the effects of excess intake.</li> <li>• The effects of alcohol on hydration.</li> <li>• The effects of alcohol on health.</li> <li>• The effects of alcohol on performance.</li> <li>• Risks of excess alcohol intake.</li> </ul>

# Providing dietary advice to support the needs of different athletes and sports people (M/650/6222)

## Unit aim

To provide the knowledge and skills to understand dietary needs of a diverse range of exercisers, sports people and athletes.

Learners will be able to provide evidence-based nutritional and dietary guidance within their scope of practice and know when and how to signpost to other professionals.

## Content

### 1. Understand nutritional guidance for vegan or vegetarian athletes and sports people

**1.1 Explain** how to apply nutritional guidance to support the needs of vegetarian athletes and sports people.

- What is a vegetarian diet?
- Reasons for following a vegetarian diet.
- Effects on performance.
- Effects on recovery.
- Common deficiencies and how to adapt nutrition.
- Effectiveness to meet protein needs of athletes and sports people.
- Example meal plans.
- Use of supplements to support dietary needs.
- Benefits and risks.

**1.2 Explain** how to apply nutritional guidance to support the needs of vegan athletes and sports people.

- What is a vegan diet?
- Reasons for following a vegan diet.
- Effects on performance.
- Effects on recovery.
- Common deficiencies and how to adapt nutrition.
- Effectiveness to meet protein needs of athletes and sports people.
- Example meal plans.
- Use of supplements to support dietary needs.
- Benefits and risks.



2. Understand food allergies and intolerances and their impact on advice	
<b>2.1 Describe</b> a range of food allergies and intolerances.	<ul style="list-style-type: none"> <li>• Difference between allergies and intolerances.</li> <li>• Foods contain common food allergies and intolerances.</li> </ul>
<b>2.2 Describe</b> methods of testing for allergies and intolerances.	<ul style="list-style-type: none"> <li>• methods of testing</li> <li>• reliability of methods.</li> </ul>
<b>2.3 Explain</b> the importance of signposting allergies and intolerances to other health professionals.	<ul style="list-style-type: none"> <li>• When to refer.</li> <li>• How to refer an individual if they suspect that they have a food allergy.</li> <li>• The importance of referring allergies and intolerances to other professionals.</li> </ul>
<b>2.4 Describe</b> the role of a dietician in the management of food allergies and intolerances.	<ul style="list-style-type: none"> <li>• Advice and guidance for different allergies and intolerances.</li> <li>• When and how food may be reintroduced by a dietitian.</li> </ul>

3. Understand the nutritional needs for different types of athletes and sports person	
<b>3.1 Explain</b> the nutritional requirements and dietary needs of the younger athlete.	<ul style="list-style-type: none"> <li>• Energy requirements.</li> <li>• Fuel consumption and usage.</li> <li>• Weight loss and RED-S (relative energy deficiency in sport) risk (see unit: Supplements, performance aids and hydration for sports performance (L/650/6221) 3.10).</li> <li>• Healthy eating.</li> <li>• Use of supplements.</li> <li>• Protein consumption.</li> <li>• Competition eating – pre, during and post-event.</li> <li>• Hydration needs.</li> </ul>
<b>3.2 Explain</b> the nutritional requirements and dietary needs of the older athlete.	<ul style="list-style-type: none"> <li>• Effects of ageing on performance.</li> <li>• Sarcopenia.</li> <li>• The performance differences between biological men and women.</li> <li>• Body composition.</li> <li>• Energy requirements and age.</li> <li>• Protein requirements and age.</li> </ul>

	<ul style="list-style-type: none"> <li>• Carbohydrate requirements and age.</li> <li>• Fluid requirements.</li> <li>• Beneficial supplements.</li> </ul>
<p><b>3.3 Explain</b> how cultural and religious dietary practices will impact dietary needs and performance.</p>	<ul style="list-style-type: none"> <li>• Effects of different dietary needs and practices and how they may affect performance.</li> <li>• Islam: <ul style="list-style-type: none"> <li>○ Muslims only consume halal meat (meat that has been slaughtered in a prescribed way according to Islamic practices). They do not consume pork and during the religious festival of Ramadan, they fast between sunrise and sunset.</li> </ul> </li> <li>• Hindu: <ul style="list-style-type: none"> <li>○ Hindus generally follow a vegetarian or vegan diet.</li> <li>○ A vegetarian is an individual who (for ethical, moral or other personal reasons) chooses not to eat meat, fish, poultry or animal products. Vegetarians do eat eggs and dairy products.</li> <li>○ A vegan follows a vegetarian diet and in addition does not eat dairy products and eggs.</li> </ul> </li> <li>• Buddhist: <ul style="list-style-type: none"> <li>○ Buddhists generally follow a vegetarian or vegan diet (see above).</li> </ul> </li> <li>• Jewish: <ul style="list-style-type: none"> <li>○ Kosher meat is prepared by using a single knife to cut open the throat to kill the animal, with all the blood drained. The meat should be soaked in water and salted to remove the last traces of blood. Meat and dairy foods must not be prepared or eaten together.</li> </ul> </li> <li>• Sikhism: <ul style="list-style-type: none"> <li>○ Some Sikhs are vegetarian. Although the religion allows individual choice about meat consumption it is forbidden to eat meat from animals slaughtered according to religious guidelines and therefore Sikhs do not eat halal or kosher meat.</li> <li>○ Eastern Orthodox Christianity: <ul style="list-style-type: none"> <li>○ Weekly fasts include abstention from meat, fish, eggs, dairy, and sometimes other foods such as olive oil and alcohol as well.</li> </ul> </li> </ul> </li> <li>• Other social/cultural factors: <ul style="list-style-type: none"> <li>○ family</li> <li>○ food availability</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>○ financial status</li> <li>○ belief system, e.g. veganism</li> <li>○ allergies, e.g. coeliac disease.</li> </ul>
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4. Understand how to apply the principles of nutrition to support performance in exercise, sport, and athletics	
<p><b>4.1 Explain</b> how to select, collect, and use information gathered to improve performance through dietary changes.</p>	<ul style="list-style-type: none"> <li>● The uses and limitations of technology for data collection and monitoring of dietary information (such as applications and fitness monitors) to support nutrition behaviour change.</li> <li>● Regular eating patterns.</li> <li>● Meal planning.</li> <li>● Food choice and selection.</li> <li>● Shopping.</li> <li>● Preparation and cooking methods.</li> <li>● Checking food labels.</li> <li>● Altering portion sizes and their relationship to energy intake, nutrient intake.</li> </ul>
<p><b>4.2 Explain</b> the use of different strategies to support dietary change to improve performance.</p>	<ul style="list-style-type: none"> <li>● Behaviour change models.</li> <li>● Motivational interviewing.</li> <li>● Goal setting.</li> <li>● Dietary records and other methods of collecting information, advantages and disadvantages, e.g. food diary, food recall and food frequency questionnaires.</li> <li>● Dietary analysis.</li> <li>● Other support systems involved, e.g. athlete, coach, teammates, family, friends, other health professionals.</li> <li>● Managing relapse.</li> </ul>
<p><b>4.3 Explain</b> how to select and apply appropriate communication methods to meet different needs.</p>	<ul style="list-style-type: none"> <li>● Use of different communication methods, e.g. in person, electronic (zoom/Teams), written (email, letter, poster, infographic), social media, non-verbal communication (body language, eye contact etc.) and verbal communication (language, tone, speed, volume etc.).</li> <li>● To explain reliable evidence-based healthy eating guidelines and nutrition information.</li> <li>● To meet needs of the sports person (individual), team (group) and workforce (training and coaching team and all involved).</li> <li>● To develop and apply protocols for the communication of nutrition information across the workforce.</li> </ul>

	<ul style="list-style-type: none"> <li>• Reliable evidence-based healthy eating guidelines and nutrition information, consistent with the needs of the individual/ group and workforce.</li> <li>• Protocols for the communication of nutrition information across the workforce.</li> <li>• Limits of own knowledge and competence and when to refer on or seek further information/ support.</li> <li>• The role and expertise of recognised nutrition professionals (ANutrs, RNutrs and RDs), who to refer to, when and how.</li> </ul>
<p><b>4.4 Explain</b> advice and guidance that can be offered within own scope of practice.</p>	<ul style="list-style-type: none"> <li>• Healthy eating guidelines – reliable, evidence-based, healthy eating guidelines to guide individual and group food choice.</li> <li>• Food groups and sources of nutrients and the contribution of a variety of foods from different food groups and knowledge of food sources of macronutrients and micronutrients (vitamins A, C, D, E, calcium, iron, zinc and sodium) to support individual and group food choice in relation to healthy eating guidelines.</li> <li>• How dietary needs can differ by gender, age and physical activity level.</li> <li>• Regular eating patterns and how this may relate to individuals and groups eating habits and the importance of maintaining regular eating patterns for a healthy and balanced diet.</li> <li>• Portion size, meals, snacks and drinks and strategies for providing and promoting appropriate portion sizes in relation to healthy eating guidelines and the impact of altering portion size on energy and nutrient intake.</li> <li>• Food labels and interpretation of nutritional information contained on food labels to guide food choice in relation to healthy eating guidelines.</li> <li>• Food preparation and cooking techniques and how different food preparation and cooking techniques impact on nutrition and healthy eating guidelines.</li> <li>• The limitations of ‘fad’ diets and potential risks, including risks of: <ul style="list-style-type: none"> <li>○ ketogenic diets</li> <li>○ intermittent fasting</li> <li>○ eating according to blood type.</li> </ul> </li> </ul>
<p><b>4.5 Explain</b> limitations and boundaries of scope of practice when providing nutritional advice and guidance.</p>	<ul style="list-style-type: none"> <li>• Association for Nutrition (AfN) codes of practice.</li> <li>• Role boundaries and ethical practice: <ul style="list-style-type: none"> <li>○ What is scope of practice? What they can and cannot do with this qualification (see Appendix 2: Association for Nutrition (AfN) code of practice).</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>○ Working within the limits of their knowledge, competence and skills.</li> <li>○ Work with 'healthy' individuals.</li> <li>● When to refer to other professionals: <ul style="list-style-type: none"> <li>○ complex or specific needs</li> <li>○ food allergies and intolerances</li> <li>○ hormonal deficiencies</li> <li>○ eating disorders</li> <li>○ health conditions, e.g. diabetes, pregnancy.</li> </ul> </li> <li>● How to refer to other professionals.</li> <li>● The range of nutritional professionals and their roles.</li> <li>● The importance of maintaining role boundaries.</li> <li>● The need to seek supervision when situations are beyond their competence and authority.</li> <li>● Being accountable for decisions and behaviours.</li> <li>● Appropriate behaviours (see Appendix 2: Association for Nutrition (AfN) code of practice).</li> <li>● Respect dignity, privacy, and safety of individuals.</li> <li>● Ensuring actions are honest, trustworthy, reliable, and dependable.</li> <li>● Ensuring services provided are delivered equally and inclusively.</li> <li>● Respecting the views, wishes and wellbeing of individuals.</li> </ul> <p>See Appendix 2: AfN code of practice.</p>
<p><b>4.6 Explain</b> how to use and store information in accordance with appropriate data protection legislation.</p>	<ul style="list-style-type: none"> <li>● The objectives and purpose of data and information collection.</li> <li>● Storage and retrieval practices.</li> <li>● Data sharing protocols.</li> <li>● Working in accordance with organisational policies and standards.</li> <li>● Suitable methods for collecting and validating the quality of data and information.</li> <li>● Legislation, e.g. GDPR, client confidentiality and data protection.</li> </ul>
<p><b>4.7 Explain</b> the importance of maintaining professional competence.</p>	<ul style="list-style-type: none"> <li>● Maintaining competence within their role and field of practice</li> <li>● Keeping knowledge and skills up-to-date to ensure safe and effective practice.</li> <li>● Understanding own development needs and make continuing improvements.</li> </ul>

	<ul style="list-style-type: none"> <li>• Continuing professional development activities and their importance for keeping skills and knowledge current.</li> <li>• Sources and types of CPD.</li> <li>• Additional qualifications and learning pathways to evolve scope of practice, e.g. dietitian.</li> </ul>
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## 5. Be able to apply the principles of nutrition to support performance in exercise, sport and athletics within scope of practice

<p><b>5.1 Consult with clients</b> and gather information about their eating behaviours and dietary requirements using appropriate methods and tools.</p>	<ul style="list-style-type: none"> <li>• See 4.</li> </ul>
<p><b>5.2 Use appropriate communication</b> methods to meet different needs and ensure safe practice.</p>	<ul style="list-style-type: none"> <li>• See 4.</li> <li>• To explain reliable evidence-based healthy eating guidelines and nutrition information, consistent with the needs of the individual/ group and workforce.</li> <li>• Protocols for the communication of nutrition information across the workforce.</li> </ul>
<p><b>5.3 Analyse</b> information gathered to identify areas for dietary change and improve performance.</p>	<ul style="list-style-type: none"> <li>• See 4.</li> </ul>
<p><b>5.4 Make recommendations</b> for appropriate nutritional strategies to meet different physiological and performance goals.</p>	<ul style="list-style-type: none"> <li>• See 4.</li> <li>• See unit: Supplements, performance aids and hydration for sports performance (L/650/6221).</li> </ul>
<p><b>5.5 Make recommendations</b> for hydration and fluid intake appropriate to the individual's requirements.</p>	<ul style="list-style-type: none"> <li>• See unit: Supplements, performance aids and hydration for sports performance (L/650/6221).</li> </ul>
<p><b>5.6 Provide advice</b> and guidance within own</p>	<ul style="list-style-type: none"> <li>• Limits of own knowledge and competence and when to refer on or seek further information/ support.</li> </ul>

scope of practice to support any recommendations given.	
<b>5.7 Signpost clients</b> to other professionals when needs and requirements exceed scope of practice.	<ul style="list-style-type: none"> <li>• The role and expertise of recognised nutrition professionals (ANutrs, RNutrs and RDs), who to refer to, when and how.</li> <li>• See 4.</li> <li>• See Appendix 2: AfN code of practice.</li> </ul>
<b>5.8 Use and store information</b> in accordance with appropriate data protection legislation.	<ul style="list-style-type: none"> <li>• See 4.</li> </ul>
<b>5.9 Reflect</b> on practice and information gathered and make recommendations to improve own skills and knowledge.	<ul style="list-style-type: none"> <li>• Use of Kolb model.</li> <li>• Identify strengths.</li> <li>• Identify areas to develop.</li> <li>• Identify sources to improve own skills and knowledge.</li> </ul>

# Appendix 1: Information sources

**Please note:** While the information sources listed are available at the point of development/publication, access to specific website pages will change over time, as will the currency of information.

## Information sources and organisations:

- American College of Sports Medicine (ACSM): <https://www.acsm.org>.
- Anorexia and Bulimia Care: [www.anorexiabulimiare.co.uk](http://www.anorexiabulimiare.co.uk).
- Association for Nutrition: <https://www.associationfornutrition.org>.
- Beat Eating Disorders: <https://www.beateatingdisorders.org.uk>.
- British Diabetic Association – Diabetes UK: [www.diabetes.org.uk](http://www.diabetes.org.uk).
- British Heart Foundation: [www.bhf.org.uk](http://www.bhf.org.uk).
- British Nutrition Foundation: <https://www.nutrition.org.uk>.
- Cannabidiol (CBD) warning: <https://www.ukad.org.uk/cannabidiol-cbd>.
- CIMSPA: <https://www.cimspa.co.uk>.
- Department of Health: [www.dh.gov.uk](http://www.dh.gov.uk).
- Drinkaware: <https://www.drinkaware.co.uk>.
- Glycaemic Index: [www.glycemicindex.com](http://www.glycemicindex.com).
- Health Development Advice: [www.hda-online.org.uk](http://www.hda-online.org.uk).
- Informed sport website: <https://sport.wetestyourtrust.com>.
- International Obesity Taskforce: [www.ietf.org](http://www.ietf.org).
- National Institute of Health and Care Excellence (NICE): <https://www.nice.org.uk>.
- National Library of medicine: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3943438>.
- National Library of Sports Medicine: <https://pubmed.ncbi.nlm.nih.gov/18049985>.
- NHS Choices: [www.nhs.uk/Livewell/Goodfood/Pages/eatwell-plate.aspx](http://www.nhs.uk/Livewell/Goodfood/Pages/eatwell-plate.aspx).
- NHS Eatwell: <https://www.nhs.uk/live-well/eat-well>.
- Research gate: <https://tinyurl.com/34v9y8rn>
- Scientific Advisory Committee on Nutrition: [www.sacn.gov.uk](http://www.sacn.gov.uk).
- The Eatwell Guide: <https://www.gov.uk/government/publications/the-eatwell-guide>.
- UK Anti-Doping (UKAD) guidance: <https://www.ukad.org.uk/athletes/managing-supplement-risks>.
- WADA prohibited substances: <https://www.wada-ama.org/en/prohibited-list>.
- World Anti-Doping Agency (WADA) guidelines: <https://www.wada-ama.org/en>.
- World Health Organisation (WHO): <https://www.who.int>.



**Textbooks:**

- American College of Sports Medicine (2022) 11<sup>th</sup> edition. *ACSM's Guidelines for Exercise Testing and Prescription*. USA: Wolters Kluwer.
- Bean, Anita (2010) *Sports Nutrition for Women*. London: Bloomsbury Publishing.
- Bean, Anita (2014) 4<sup>th</sup> edition. *Food for Fitness*. London: Bloomsbury Publishing.
- Bean, Anita (2022) 9<sup>th</sup> edition. *The Complete Guide to Sports Nutrition*. London: Bloomsbury Publishing.

# Appendix 2: AfN code of practice

**Source: Association for Nutrition (AfN:2022)**

## **Code of practice (compulsory)**

1. Students must know and be able to demonstrate their understanding of the boundaries of their role and responsibilities, including:

- a) Working within the limits of their knowledge, competence and skills.
- b) Understanding the boundary of their role and when/how to refer on as appropriate.
- c) The need to seek supervision when situations are beyond their competence and authority.
- d) Promoting and demonstrating good practice as an individual and as a team member.
- e) Being accountable for their own decisions and behaviours.

2. Students must know and be able to demonstrate their understanding of the need to maintain their levels of competence, including:

- a) Maintaining competence within their role and field of practice.
- b) Keeping knowledge and skills up-to-date to ensure safe and effective practice.
- c) Understanding own development needs and make continuing improvements.

3. Students must know and be able to demonstrate their understanding of the need to uphold basic standards of good character, including:

- a) Respect dignity, privacy and safety of individuals.
- b) Ensuring actions are honest, trustworthy, reliable and dependable.
- c) Ensuring services provided are delivered equally and inclusively.
- d) Respecting the views, wishes and wellbeing of individuals.

## **Notes on boundaries and responsibilities (compulsory)**

- The competencies listed above are only for use by those working with the general (healthy) population.
- A student successfully completing a certified course should be able to aid an individual in understanding how official guidelines are applied to them and their food preferences and signpost to reputable information sources, such as NHS Choices, recognised health charities, Government advice and to suitably qualified medical and nutrition professionals. Completion of a certified course does not qualify an individual to provide prescribed, individualised or bespoke advice that goes outside of supporting achievement of official nutrition recommendations or in relation to an individual's medical condition(s).
- Individuals requesting/requiring prescribed, individualised or bespoke advice in relation to nutrition, dietary advice in relation to medical conditions, dietary advice or support for the primary aim of influencing sporting/fitness performance i.e. for elite/professional individuals or groups, should be promptly referred on to a suitably qualified medical or nutrition professional (ANutr, RNutr, RD).

# Guidance for training providers

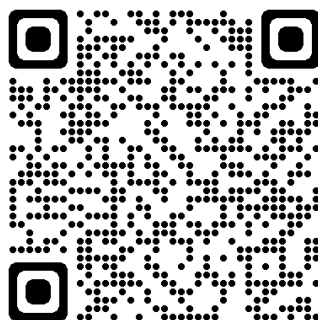
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## Centre and qualification approval

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Before you can begin delivery of this qualification, you must be a YMCA Awards centre with appropriate qualification and staff approval.

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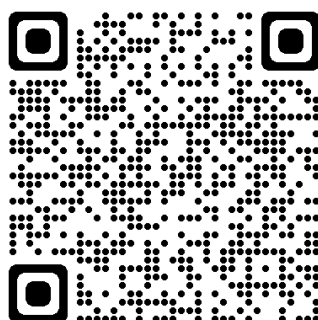
## Tutor, assessor and IQA requirements

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All tutors, assessors and internal quality assurance (IQA) staff need to hold:

- A subject matter qualification.
- A qualification related to the role that they will be performing (tutor, assessor or IQA).

Find out more on our website:



[ymcaawards.co.uk/approvals/staff-approval](https://ymcaawards.co.uk/approvals/staff-approval)

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The logo consists of a solid blue square. Inside the square, the word 'YMCA' is written in a white, rounded, sans-serif font. Below 'YMCA', the word 'awards' is written in a smaller, white, lowercase, sans-serif font.

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