YMCA Level 3 Diploma in Exercise Referral (600/4731/8)

Syllabus

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Level 3 Diploma in Exercise Referral

Syllabus

Qualification number: 600/4731/8

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Introduction

Qualification aim

This qualification aims to equip the learner with the skills, knowledge and understanding required to plan and instruct programmes for exercise referral patients

Qualification structure

The YMCA Awards Level 3 Diploma in Exercise Referral comprises 6 mandatory units.

Unit reference number	Unit title	Level	GLH	Credits
Y/503/7493	Professional practice for exercise referral instructors	3	14	2
R/503/7492	Understanding medical conditions for exercise referral	4	35	7
D/503/7494	Planning exercise referral programmes with patients	3	52	8
L/503/7491	Instructing exercise with referred patients	3	58	9
L/600/9054	Applying the principles of nutrition to a physical activity programme	3	40	6
A/600/9051	Anatomy and physiology for exercise and health	3	40	6

The total credit value for this qualification is 38.

The total qualification time (TQT) for this qualification is 380.

The total guided learning hours (GLH) for this qualification are 242.

Total Qualification Time (TQT)

This is an estimate of the total amount of time, measured in hours that a learner would reasonably need to be able to show the level of achievement necessary for the award of a qualification.

Total Qualification Time is made up of the following two elements:

(a) the number of hours which an awarding organisation has assigned to a qualification for Guided Learning (see below), and

(b) an estimate of the number of hours a Learner will reasonably be likely to spend in preparation, study or any other form of participation in education or training, including assessment, which takes place as directed by – but not under the immediate guidance or supervision of – a lecturer, supervisor, tutor or other appropriate provider of education or training.

Guided Learning Hours (GLH)

This is:

- Face-to-face delivery (learning delivered by a lecturer, supervisor, tutor or other appropriate member of the training team)

- E-learning with a lecturer, teacher or tutor present/available in real-time (the co-presence of learner and tutor can be either remote or in the same physical place)

- Invigilated assessment (external tests sat under controlled or open-book conditions)

- Internal assessment carried out by the learner with a lecturer, teacher or tutor present/available in real-time (the co-presence of learner and tutor can be either remote or in the same physical place).

This is not:

Unsupervised learning such as:

- E-learning that the learner carries out unsupervised and with no real-time support from a lecturer, teacher or tutor

- Assessment internally carried out by the learner without a lecturer, teacher or tutor present/available in real-time (for example, completing a Learner Assessment Record (LAR) at home)

- Any additional further study, revision and training activities that the learner does unsupervised to support their learning.

Pre-requisites

Minimum age: 16 years old.

Learners must hold one or more of the following:

- Level 2 Certificate in Fitness Instructing or equivalent
- Level 3 Certificate in Personal Training
- Level 3 Diploma in Teaching Pilates
- Level 3 Diploma in Teaching Yoga
- Any qualifications which give entry to the REPs' Physical Activity Advisor category eg, YMCA Awards Level 2 Certificate in Fitness Walking.

Tutor and assessor requirements

Tutors, assessors and quality assurance staff.

Required criteria

All tutors, assessors and quality assurance staff must:

- possess an exercise referral specific qualification equivalent to the qualification or units being taught/assessed or quality assured
- possess a context specific qualification in the context of fitness being assessed or quality assured eg, exercise to music, yoga
- have relevant industry experience
- have knowledge of and a commitment to the Exercise and Fitness Code of Ethical Practice
- demonstrate active involvement in a process of industry relevant continued professional development during the last two years (this may be discipline/context specific or relevant to tutoring assessing or quality assurance)
- be knowledgeable of the Active Leisure, Learning and Wellbeing framework of qualifications.

Tutors

Tutors must hold, or be working towards a teaching qualification.

The following are acceptable:

- Level 3 Award in Preparing to Teach in the Lifelong Learning Sector (PTTLS)
- Level 4 Award in Preparing to Teach in the Lifelong Learning Sector (PTTLS)
- Level 4 Certificate in Teaching in the Lifelong Learning Sector (CTTLS)
- Level 5 Diploma in Teaching in the Lifelong Learning Sector (DTTLS)
- Certificate in Education
- Relevant predecessor NQF tutor qualifications.

Assessors

Assessors must hold or be working towards any of the following:

- Level 3 Award in Assessing Vocationally Related Achievement
- Level 3 Award in Assessing Competence in the Work Environment
- Level 3 Certificate in Assessing Vocational Achievement
- A1 (previously D32, D33).

Internal quality assurers

Internal quality assurers must hold or be working towards any of the following:

- Level 4 Award in the Internal Quality Assurance of Assessment Processes and Practice
- Level 4 Certificate in Leading the Internal Quality Assurance of Assessment Processes and Practice
- V1 (previously D34).

(It is recommended that internal quality assurance staff also hold a relevant assessing qualification as detailed above.)

External quality assurers

External quality assurers must hold or be working towards any of the following:

- Level 4 Award in the External Quality Assurance of Assessment Processes and Practice
- Level 4 Certificate in Leading the External Quality Assurance of Assessment Processes and Practice
- V2 (previously D35).

It is recommended that external quality assurance staff also hold a relevant assessing and internal quality assurance qualifications as detailed above.

All new assessors and quality assurance staff must be given a clear action plan for achieving the appropriate qualification(s) and should be countersigned by an appropriately qualified individual until the qualification(s) are achieved.

Desirable criteria

All assessors and quality assurers should be registered with the Register of Exercise Professionals (REPs).

Syllabus information and supporting resources

This syllabus has been created to reflect the skills, knowledge and competence of the YMCA Awards Level 3 Diploma in Exercise Referral.

This syllabus details the 6 units, learning outcomes and assessment criteria that make up this qualification, together with the relevant assessment strategies and evidence requirements.

This syllabus does not contain the assessment paperwork; this is contained in the learner assessment record (LAR), described below

Learner Assessment Record (LAR)

This document is used by the learner and assessor to record evidence and assessment decisions. It contains all the assessment paperwork relating to the 6 units.

The LAR is available to approved centres to download from the YMCA Awards website, or it can be purchased in hard copy.

To order resources that support this qualification, email awards.resources@ymca.co.uk.

Units explained

Units form the building blocks of all qualifications and comprise the following:

Learning outcomes

These outcomes set out what a learner is expected to know, understand or be able to perform as the result of a process of learning. They are expressed in this syllabus as 'The learner will...'

Assessment criteria

These specify the standard a learner is expected to meet in order to demonstrate that the learning outcomes of that unit have been achieved. They are expressed in this syllabus as 'The learner can...'

Professional practice for exercise referral instructors (Y/503/7493)

Unit aims

To provide the learner with knowledge and understanding of the exercise referral process, and their role within it

The learner will:

1. Understand the role and importance of exercise referral and related policies and key documents

The learner can:

1.1 Explain the role of exercise referral in both the fitness industry and the health sector, including:

- Prevention and management of chronic health conditions for inactive or ineffectively active individuals with medical conditions
- CHD risk factors (2 or more) or mild to moderate mental health conditions who need structured and supported exercise

1.2 Evaluate the general role of exercise in disease risk reduction and condition management

- Role/benefits to include:
    - Reduced risk of chronic conditions such as:
        - CHD
        - hypertension
        - stroke
        - diabetes
        - obesity
        - osteoporosis
        - depression
        - anxiety
- Potential prevention and management of chronic conditions
- Improved health and well-being (physical, mental, social, emotional etc.)
- Increased independence
- Weight management
- Reduced risk of premature death
- Reduced risk of falls

See also:

- R/503/7492 Understanding medical conditions for exercise referral

1.3 Outline the key points of government policies relating to exercise referral schemes, including those relating to:

- Employment (professionally qualified)
- Health and safety (risk management)
- Human rights
- Equality
- Freedom of information

1.4 Outline key points from the professional and operational standards for exercise referral, including key points relating to:

- Patient selection
- Risk stratification
- Inclusion
- Screening
- Exit strategies
- Professional competence
- Recording, reporting, monitoring and evaluation
- Quality assurance
- Medico-legal issues

NB: Refer to the 'Professional and operational standards for exercise referral' developed by the exercise referral and advisory group 2011.

The learner will:

2 Understand roles and responsibilities within an exercise referral scheme

The learner can:

2.1 Explain the roles of the medical, health, and fitness professionals in an exercise referral scheme

2.2 Define the fitness professional's scope of practice and the inter-professional boundaries within an exercise referral scheme

- Position
- Responsibilities
- Boundaries
- Health professional
    - Refer patients
    - Clinical responsibility
    - Transfer information

Do not take responsibility for the delivery of the exercise session(s) or administration of the referral programme (NQAF 2001).

- Scheme manager
    - Scheme set up, policies recruitment and administration
- Scheme co-ordinator
    - Process information from GP
    - Initial assessment
    - Maintain records

Not responsible for medical diagnosis and should not take responsibility for clients until 'all relevant clinical information is available' (NQAF 2001)

- Exercise professional
    - Safe and effective exercise design and delivery and monitoring
    - Qualified and competent, insured

Adapted from: Lawrence & Barnett (2006 & 2012)

See also: BHF 2010 toolkit & NQAF 2001and 'Professional and operational standards for exercise referral, developed by the exercise referral' and advisory group 2011 and REPs' role descriptor of exercise referral.

2.3 Describe how to deal with a patient who has a medical condition outside the scope of practice of the exercise referral instructor

2.4 Explain when to refer to other professionals including the original referrer

- Scope of practice (according to professional qualifications and risk stratification)
- Issues outside of scope such as:
    - Medical
    - Nutritional
    - Psychological
    - Risk stratification
    - Contraindications
- Other professionals to include:
    - GP
    - Counsellor
    - Dietician
    - Smoking cessation
    - Other instructors

See also:

BHF 2010 toolkit and NQAF 2001 and 'Professional and operational standards for exercise referral' developed by the exercise referral and advisory group (ERAG) 2011.

Risk stratification tools in BHF 2010 toolkit & NQAF 2001and 'Professional and operational standards for exercise referral' developed by the exercise referral and advisory group 2011.

2.5 Explain how to determine 'inappropriate referrals':

- Inadequate/insufficient qualifications
- Risk stratification
- Absolute contraindications, such as: (Listed in BHF Toolkit. 2010:93)
    - A recent significant change in a resting ECG, recent myocardial infarction or other acute cardiac event
    - Symptomatic severe aortic stenosis
    - Acute pulmonary embolus or pulmonary infarction
    - Acute myocarditis or pericarditis
    - Suspected or known dissecting aneurysm
    - Resting systolic blood pressure ≥ 180mmHg / diastolic blood pressure ≥ 100mmHg
    - Uncontrolled/unstable angina
    - Acute uncontrolled psychiatric illness
    - Unstable or acute heart failure
    - New or uncontrolled arrhythmias
    - Other rapidly progressing terminal illness

    - Experiences significant drop in BP during exercise
    - Uncontrolled resting tachycardia ≥ 100 bpm
    - Febrile illness
    - Experiences pain, dizziness or excessive breathlessness during exertion
    - Any unstable, uncontrolled condition
- Any referral not recommended by health professional
- Client has not given their consent to be referred

See also risk stratification tools (8.2) in: BHF 2010 toolkit and NQAF 2001 and 'Professional and operational standards for exercise referral' developed by the ERAG 2011.

2.6 Explain the importance of not accepting a patient who has been declined a referral for exercise from their medical practitioner or health professional, including:

- Potential to do harm
- Medico-legal boundary infringement
- Health and safety
- Professionalism

See also the Register of Exercise Professionals website for role description and code of ethical practice

2.7 Explain the importance of effective inter-professional communication, including:

- Importance:
    - Professionalism
    - Multi-disciplinary working
    - Respecting of boundaries
    - Legal and ethical (confidentiality)
- Purpose:
    - transfer of information
    - Reporting on progress
- Methods:
    - Formal versus informal
    - Letter
    - Telephone
    - Email
    - Other.

The learner will:

3 Understand the current healthcare systems in the UK

The learner can:

3.1 Describe the role of clinical commissioning groups, including:

- Budget holders
- Decision makers for local health services

3.2 Identify key health service documents/policies and their impact on the health care system in relation to exercise referral, to include:

- Policies (see AC 1.3)
- Examples of health service documents:
    - Allied Dunbar National Fitness Survey (1992)
    - CMO reports - At Least Five a Week (2005), Start Active, Stay Active (2011)
    - NICE (2006) A rapid review of exercise referral schemes to promote activity in adults
    - Foresight document on obesity (2007)
    - Public Health Outcomes Framework (2011)
- Impact to include:
    - Activity recommendations
    - Evidence reporting
    - Health promotion
    - Commissioning.

The learner will:

4 Understand the exercise referral process

The learner can:

4.1 Explain the process of receiving a referred patient from a healthcare professional, including:

- Client visits GP or other health care professional who clinically assesses and transfers information
- Referral co-ordinator receives and checks information and refers forwards (or backwards if incomplete records)
- Exercise professional – initial assessment and patient paperwork

4.2 Describe the protocol for an initial patient consultation with the exercise referral instructor, including:

- Checking of transfer records
- Information gathered to include:
    - Referral form, informed consent and authority to share confidential information
    - Medical and surgical history and medications
    - Physical activity history and preferences, current fitness
    - Lifestyle behaviours
    - Motivation and barriers
    - Readiness and goals
    - Physical measurements – see professional practice AC 4.3 assessments/measurements (ERAG 2011)
- Assessments/measurements (see AC 4.3)
- Patient centred approach (see AC 6.1 and 6.2)
- Records maintained

See also: BHF 2010 toolkit & NQAF 2001 and 'Professional and operational standards for exercise referral' developed by the exercise referral and advisory group 2011

4.3 Describe the principles of patient monitoring and data collection

- Patient monitoring:
  - On entry
  - During programme
  - Exit
  - Follow up
- Assessment/measurements including:
  - BMI
  - Waist circumference
  - IPA-Q
  - Other (see ERAG 2011)

For data collection (see AC 4.2)

4.4 Outline the medico-legal requirements relevant to the exercise referral instructor job role

- See AC 2.1
- Qualified and competent, work within boundaries
- Professional membership (REPs) and insurance
- Record keeping (confidentiality etc.)

See also: BHF 2010 toolkit and NQAF 2001 and 'Professional and operational standards for exercise referral' developed by the exercise referral and advisory group 2011.

The learner will:

5 Understand the principles and procedures of record keeping

The learner can:

5.1 Explain how patient confidentiality is maintained in an exercise referral scheme, including:

- Access by relevant parties
- Factual information
- Secure storage and transfer

See also: BHF 2010 toolkit & NQAF 2001and 'Professional and operational standards for exercise referral' ERAG 2011

5.2 Explain the concept of data protection

- All personal information is legally protected – see Data Protection Act 1998
- Information governance ensures necessary safeguards for, and appropriate use of, patient and personal information – see NHS Information Governance at connectingforhealth.nhs.uk

5.3 Explain the meaning of validity and reliability in relation to measurement of techniques and outcomes

Validity:

- Measure what was intended to be measured

Reliability

- Same result obtained elsewhere
    - Repeatable
    - Protocols followed
    - Standardised methods
    - Types of research used to include:
        - Meta-analysis
        - Randomised
        - Controlled trials

See also: BHF 2010 toolkit for review of validity/reliability of types of research

5.4 Explain how to evaluate the quality and reliability of evidence, including:

- Type of study
    - Randomise control studies
- Objectives and purpose
- Qualitative and quantitative methods – validity and reliability
- Sampling strategy and size
- Researcher skills

See also: BHF 2010 toolkit and 'Professional and operational standards for exercise referral' ERAG 2011.

The learner will:

6 Understand the concept of a patient centred approach

The learner can:

6.1 Explain how verbal and non-verbal communication, appearance and body language can influence patients' perception, including:

- Albert Mehrabian's communication model: words (6%); intonation (38%) and body language (55%)
- Perception influenced by:
    - Level of rapport
    - Extent to which client feels understood
    - Similarities and differences between client and instructor
- Other factors influencing perception such as:
    - Strands of equality
        - Age
        - Race
        - Sex
        - Sexual orientation
        - Gender reassignment
        - Disability
        - Beliefs
        - Culture
        - Class

- Education
- Language

6.2 Describe a range of consulting skills, including:

- Verbal checks and types of questioning (open, closed etc.)
- Written questionnaires
- Observation
- Listening
- Core conditions
    - Empathy
    - Genuineness
    - Positive regard

6.3 Explain the term 'health behaviours', including:

- Physical activity/inactivity
- Health screening checks (regular or infrequent)
- Healthy/unhealthy diet
- Not smoking/smoking
- Alcohol or substance consumption (use/misuse)
- Sexual behaviour (safe/unsafe)

6.4 Explain locus of control, including:

- Internal or external factors
- Impact upon motivation
- Commitment
- Level of supervision.

The learner will:

7 Understand how to monitor a successful exercise referral scheme

The learner can

7.1 Describe techniques to monitor success for the patient and the scheme, including:

- Success monitors:
    - Adherence
    - Targets achieved
- Attendance and retention:
- Techniques and methods:
    - Questionnaires
    - Observation
    - Physical and health assessments
- Follow up records:
- Possible outcomes:
    - Physical
    - Medical
    - Health
    - Psychological
    - Social

7.2 Describe the importance of monitoring and evaluation in exercise referral, including:

- Monitor success (see AC 7.1)
- Review impact on local health outcomes
- Improvement/development to address needs
- Ongoing funding
- Inform evidence base

The learner will

8 Understand the principles of risk stratification in exercise referral

The learner can:

8.1 Describe the principles of risk stratification

- Low, moderate, high, contraindications (see AC 2.5)

See also: Risk stratification tools in BHF 2010 toolkit & NQAF 2001and 'Professional and Operational Standards for exercise referral' developed by the exercise referral and advisory group 2011

8.2 Explain the current use of risk stratification tools used in exercise referral, including:

- Pyramid. Available from: NQAF/DoH. 2001:10
- Irwin and Morgan. Available from BHF toolkit 2010
- ACSM logic model. Available from: ACSM 2010:24

See also: 'Professional and operational standards for exercise referral' ERAG 201

Assessment specification

Professional practice for exercise referral instructors

Assessment element 1: worksheet

Learners are required to complete a worksheet on 'Professional practice for exercise referral instructors'.

This can be completed as part of a course or as part of summative assessment.

Learners must provide evidence that they possess all the necessary knowledge and understanding to satisfy the requirements of this unit; if they fail to provide sufficient evidence through completion of the worksheet, supplementary questions will need to be asked by the assessor to confirm competence, or otherwise.

All supplementary questions and answers must be recorded.

The worksheet:

- must be the learner's sole work and group completion is not permitted
- may be completed over a period of time
- may be completed away from the centre (ie, as a homework task)
- may be marked by the course tutor or an independent assessor.

Understanding medical conditions for exercise referral (R/503/7492)

Unit aim

This unit will provide the learner with the knowledge and understanding of a range of medical conditions, and how to prescribe safe and effective exercise for them.

The learner will:

1 Understand the clinical features of medical conditions relevant to exercise referral programmes

The learner can:

1.1 Describe the pathophysiology, and clinical signs and symptoms of specified medical conditions

Pathophysiology

Disease's progression and the associated functional changes ie, death of tissue

Clinical signs

These are generally objective indicators of disease ie, how the disease manifests itself from a third person's perspective

Symptoms

These are generally subjective indicators of disease ie, how the disease manifests itself from the patients' perspective

Specified medical conditions must include:

- Hypertension
- Hypercholesterolaemia
- Chronic obstructive pulmonary disease (COPD)
- Asthma
- Obesity
- Diabetes type 1 and 2
- Osteoarthritis
- Rheumatoid arthritis
- Osteoporosis
- Depression
- Stress
- Anxiety
- Simple mechanical back pain
- Joint replacement

See appendix A for full details

1.2 Describe how pathophysiology, and clinical signs and symptoms change with progression of specified medical conditions

- Specified medical conditions: (see AC 1.1)
- Progression: see appendix A

1.3 Describe the common causes of specified medical conditions

- Specified medical conditions (see AC 1.1)
- Common causes see appendix A.

The learner will:

2 Know the accepted methods for treatment and management of medical conditions relevant to exercise referral programmes

The learner can:

2.1 Using a range of credible sources, identify the common drug, surgical or therapeutic interventions used to treat specified medical conditions

Credible sources

- MIMS:
  - www.mims.co.uk/drugs/a/
- British National Formulary (BNF):
  - http://bnf.org/bnf/extra/current/450002.htm
- BMA New Guide to Medicine

see appendix C

Interventions

see appendix B

2.2 Describe the desired effects, and side effects, of common medications on the patients exercise response for specified medical conditions

see appendix B

2.3 Describe how lifestyle modification, including nutrition and physical activity changes, can be used in addition to medical therapies for specified medical conditions

- General
  - Eat well guidance for healthy adults
  - Current CMO guidance for activity
  - Smoking cessation
  - Making every contact count (MECC) initiative
- Persons with medical conditions
  - Seek specialist advice from their GP or dietician on specific dietary recommendations

See also appendix C 'Information sources and nutrition, physical activity and other interventions'.

The learner will:

3 Understand the relationship between exercise and specified exercise referral medical conditions

The learner can:

3.1 Explain the risks of exercise for patients with specified medical conditions

Specified medical conditions

See appendix C

- General
    - Condition negatively impacted/worsening
    - Reduction in self-esteem
    - Accidents and emergencies to include:
        - Strains/sprains
        - Dizziness/fainting
        - Hypoglycaemia
        - Fractures and falls
        - Exercise induced asthma
        - Cramps
        - Hyperthermia
        - Dehydration
        - Myocardial infarction

3.2 Explain how exercise can benefit patients with specified medical conditions

See appendix C

3.3 Evaluate the risks of exercise against the benefits for patients with specified medical conditions

Use information contained within appendix C.

The learner will:

4 Understand how to programme safe, effective exercise programmes for patients with specified exercise referral medical conditions

The learner can:

4.1 Outline exercise guidelines and restrictions for patients with specified medical conditions

See appendix C and recommended reading list

4.2 Identify considerations for exercise when dealing with co-morbidities, including:

- Risk stratification
- Potential to manage any medical emergency
- Scope of practice
- Referral to other professionals
- Absolute contraindications

Principles of training - modifications and adaptations (if within scope of practice)

See also: BHF 2010 toolkit & NQAF 2001and 'Professional and operational standards for exercise referral' ERAG 2011.

Appendix A

Condition	Signs and symptoms	Pathophysiology	Common causes
	This is not an exhaustive list		

Hypertension	• Asymptomatic headaches
	• Nosebleeds
	• Shortness of breath (SOB)
	• General malaise
	• Flushed appearance
		• Sustained, elevated blood pressure affects structure and function of blood vessels
		• CHD/CVD
		• Can lead to:
		  ○ Stroke/TIA
		  ○ Kidney failure
		  ○ Retinopathy
		  ○ Heart failure
		  ○ Peripheral artery disease
			Risk factors
			• Modifiable:
			Sedentary lifestyle, diet, obesity, smoking, alcohol, excessive salt intake, hypercholesterolemia, type 2 diabetes
			• Non modifiable:
			Age, family history, genetics, ethnicity

Hypercholesterolaemia	• Asymptomatic • High cholesterol levels above 5Mmol	• Plaque/atheroma on artery walls • Narrowing and hardening of arteries • Atherosclerosis • CHD/CVD • Stroke	Risk factors • As above
Chronic obstructive pulmonary disease (COP)	• Chest tightness • Productive cough • SOB • Wheeze	• Inflammation of airways leading to scarring (fibrosis) • Reduction in elasticity of lung tissue • Increased mucus production • Peripheral muscle weakness	Risk factors: • Modifiable: Smoking, pollution, chemicals, dust, other allergens • Non-modifiable: Genetic, over 35, socio-economic status
Asthma	• Chest tightness • Cough • SOB • Wheeze	• Narrowing of airways caused by allergy • Mucus secretion • Inflammation, infection, broncho-constriction	Risk factors: • Modifiable: smoking, animals, chemicals, dust, stress/emotion, some medications, allergy • Non-modifiable: genetic, viral or bacterial infection

Condition	Signs and symptoms	Pathophysiology	Common causes
	This is not an exhaustive list		

Obesity	• BMI greater than 30 kg.m2 or 27 kg.m2 for Asians
	• Waist circumference in excess of 35 inches for women and 40 inches for men OR for Asian women in excess of 32 and Asian men in excess of 36 inches
		• Other CHD risk factors
		• Respiratory conditions
		• Contributory factor for some cancers
		• Diabetes type 2
		• Joint and mobility problems
		• Psychological impact
			No conclusive evidence
			• Modifiable:
			  ○ Energy in (food) exceeds energy out (activity), Sedentary lifestyle
			  ○ Socio-economic factors (fast food, reliance on technology etc.)
			  ○ Physiological factors (metabolic rate)
			• Non-modifiable:
			  ○ Genetic factors (family history, childhood obesity)
			  ○ Medical reasons (underactive thyroid)

Diabetes type 1	• Abnormally high blood sugar levels due to lack of insulin • Excessive thirst and urination • Hunger • Weight loss or gain • Blurred vision • Slow wound healing • Recurrent infections • Tiredness	• Pancreas no longer produces insulin • Silent angina/MI • Peripheral neuropathy retinopathy • Increase CHD risk • Risk of: Hypoglycaemia BG below 4mmol/l • Hyperglycaemia BG above 10mmol/l	Risk factor • Non-modifiable: Age, viral infection, auto-immune, family history of type 1, environmental triggers (chemicals and viruses)
Diabetes type 2	• Abnormally high sugar levels due to insufficient insulin or reduced insulin sensitivity • May be no symptoms for years • Or symptoms as above	• Inadequate production of insulin or insulin sensitivity • Increase CHD risk • Hypertension • Hypercholesterolaemia • Silent angina/MI • Peripheral neuropathy • Retinopathy • Risk of: Hypoglycaemia BG below 4mmol/l • Hyperglycaemia BG above 10mmol/l	Risk factors • Modifiable: Sedentary lifestyle, obesity, diet, hypertension • Non-modifiable: Family history of type 2, age, ethnicity, high blood pressure, inactivity

Condition	Signs and symptoms	Pathophysiology	Common causes
	This is not an exhaustive list		
Osteoarthritis	• Pain (exercise and rest) • Stiffness • Swelling • Muscle weakness	• Joint degeneration due to wear and tear • Age related • Repetitive strain	Risk factors • Modifiable: occupation, sedentary lifestyle, some sports, RSI, obesity • Non-modifiable: age, gender, family history, trauma
Rheumatoid arthritis	• Flare up and remission phases • Pain, inflammation, damage to joint tissues, deformity of joints in progressed stages • Limited ROM	• Auto immune • Systemic condition • Causing inflammation of joints and other organs • Joint deformity • Emotional and mental symptoms may lead to depression and anxiety	Cause unknown Risk factor • Modifiable: smoking • Non-modifiable: gender, family history, infections or environmental triggers that cause body to attack own tissues
Osteoporosis	• Loss of bone calcium/bone density • BMD >2.5 SD • No visible signs • First sign is usually bone breaking at slight impact	• Fractures • Falls • Loss of height • Kyphosis	Risk factor • Modifiable: diet, sedentary lifestyles, smoking, alcohol intake, caffeine, carbonated drinks Non-modifiable: Gender, age, hormones, heredity, body type/low body fat, ethnicity, nulliparity, some medical conditions
Joint replacement	• Usually hip or knee to replace a joint where disease has worn down tissue	• New joint unstable and prone to dislocation for a few weeks post operation • Lifespan of joint replacement is around 10 years • Normal functioning within 6 months • Rehabilitation required	• Chronic obesity (some NHS Trusts restrict access to total hip or knee replacement for obese patients) • Wear and tear • Osteoarthritis

Condition	Signs and symptoms	Pathophysiology	Common causes
	This is not an exhaustive list		
Depression	Core (two or more from) • Low mood • Reduced interest, pleasure, enjoyment in life • Reduced energy, fatigue Other (at least 3) • Apprehension • Disturbed sleep • Disturbed appetite • Physical inactivity or hyper-activity • Thoughts of self-harm or suicide • Guilt, worthlessness, self-reproach • Reduced concentration • Low self-esteem and self-confidence • Pessimistic • Decrease in sexual drive	• From mild to moderate to severe • Untreated or unmanaged can have significant long term impact on physical health • Connected with alcohol misuse and eating disorders (including binge eating, which may lead to obesity) • Risk of suicide	• Long term stress • Socio-economic factors (unemployment etc.); imbalances of the chemicals that maintain the functioning of the brain (serotonin, dopamine, norepinephrine etc.) • Physical illness/viral infection • Nutrition and inactivity; early developmental experiences (eg, loss of a parent or caregiver) • Lack of self-esteem or self-worth • Ineffective thinking patterns (negative thinking and/or focusing on fear)

Condition	Signs and symptoms	Pathophysiology	Common causes
	This is not an exhaustive list		
Anxiety General anxiety disorder (GAD)	• Psychological restlessness, feeling on edge, difficulty concentrating, easily distracted, irritability, impatience, constant vigilance • Physical lethargy, dizziness, palpitations, muscle aches, shortness of breath, gastrointestinal problems, headache and/or migraine, excessive thirst, frequent urination, difficulty in falling or staying asleep	• Untreated or unmanaged can have significant long term impact on physical health • Connected with alcohol and substance misuse • Risk of suicide and self-harm • High blood pressure • High cholesterol • Coronary heart disease • Osteoporosis • Depression • Anxiety disorders • Irritable bowel syndrome • Some cancers • Alcohol related problems • Eating disorders	• Irrational thinking • Chemical imbalance • Genetic disposition • Lifestyle factors – unemployment, relationship difficulties, illness, bereavement, life transitions • Early developmental experiences • Low self-worth, self-esteem • Bullying and abuse

Appendix B

Condition	Medical intervention and desired effect	Side effects	Lifestyle intervention

Hypertension	• Beta-blockers
	  ○ To reduce workload of heart and lower BP
	• Alpha blockers
	  ○ To reduce hypertension
		• May raise glucose levels in diabetics
		• Sleep disturbance
		• Dizziness or feelings of faintness especially when sitting up or standing
		• Urinary incontinence
			• Activity
			• Dietary changes (salt reduction and reduce alcohol) – see BHF guidance and NHS choices guidance
			• Relaxation – Benson method

Hypercholesterolaemia	• Statins ○ To reduce coronary events, increase HDL and reduce LDL	• Gastrointestinal upset • Aching legs	• Activity • Dietary changes, reduce alcohol – see BHF guidance and NHS choices guidance

Chronic Obstructive Pulmonary Disease	• Oral and inhaled medication
	  ○ To reduce symptoms and improve exercise capacity
	• Bronchodilators
	  ○ To relax airways
	• Anti-inflammatory drugs
	  ○ To reduce thickness of sputum
	  ○ To reduce airway inflammation
		Bronchodilators
		• Tachycardia
		• Palpitations
		• Headache
		• Malaise
		Corticosteroids (inhaled or oral)
		• Risk of osteoporosis
		• Weight gain
		• Thin skin, bruising, mood swings
		• Altered diabetic control
			• No long term cure
			• Medication
			• Exercise
			• Smoking cessation
			• Long term oxygen therapy
			• Lung surgery/transplant

Asthma	• Beta 2 agonists (short lasting and long lasting)
	  ○ To reduce airway obstruction or control ongoing symptoms
	• Corticosteroids (inhaled or oral)
	  ○ To reduce airway inflammation
		• Tremors
		• Nervous tension
		• Tachycardia
		• Muscle cramps
		• Palpitations
		• Risk of osteoporosis
		• Weight gain
		• Thin skin, bruising
		• Mood swings
		• Altered diabetic control
			• Exercise
			• Minimise exposure to triggers
			• Smoking cessation

Condition	Medical intervention and desired effect	Side effects	Lifestyle intervention
Obesity	• Orlistat (only with other lifestyle changes)	• Flatulence • Abdominal pain • Fatty or oily stools and discharge from rectum • Need the toilet urgently and more frequently	• Activity • Dietary changes • Counselling/talking therapies • Surgery (gastric band)

Diabetes type 1 and 2	• Insulin secretagogues
	  ○ To increase insulin secretion used for type 1 (and sometimes for type 2 if other medication unsuccessful)
	• Sulphonylureas
	  ○ To increase insulin production
	• Biguanide
	  ○ To lower BG levels
		• Risk of hypoglycaemia (insulin secretagogues)
		• Sulphonylureas (weight gain, nauseas, hypoglycaemia)
		• Biguanide (mild diarrhoea)
			• Diet – regular meals, avoid excessive alcohol
			• Activity

Osteoarthritis and joint replacement	• Pain relievers (paracetamol) • NSAIDS /corticosteroids ○ To reduce swelling and pain	• Some pain relievers addictive NSAIDS • gastrointestinal problems • may trigger asthma attach in asthmatics	Osteoarthritis • Activity to boost synovial fluid and maintain muscle strength • Physiotherapy • Glucosamine sulphate or derivatives • Weight loss Joint replacement • Gentle exercise to strengthen muscles around joint, improve stability and maintain mobility

Rheumatoid arthritis	• NSAIDS /corticosteroids
	  ○ To reduce swelling and pain
	
	• DMARDS (second line of treatment)
	  ○ To reduce joint damage and promote remission
		NSAIDS
		  • Gastrointestinal problems
		  • May trigger asthma attack in asthmatics
		Corticosteroids
		  • Thinning of skin
		  • Risk of osteoporosis
			• Physiotherapy
			• Weight loss
			• Activity during remission

Condition	Medical intervention and desired effect	Side effects	Lifestyle intervention
Osteoporosis	• Bisphosphonates (most common) Non-hormonal medications which slow down the cells which break down bone (osteoclasts) and enable bone building cells (osteoblasts) to work more effectively Others: • Hormone replacement therapy (HRT) can help maintain bone density and reduce fracture rates • Selective oestrogen receptor modulators maintain bone density and reduce the risk of vertebral fractures. • Testosterone maintain bone density for men with low testosterone levels • Calcium and Vitamin D supplements	Bisphosphonates • Irritation of the gullet • May not be suitable for people with stomach/bowel trouble or kidney problems	• Weight bearing exercise • Dietary changes increase calcium intake (eg, milk, dairy) • Reduce caffeine, smoking, alcohol
Depression	• Antidepressants ○ To reduce effects of symptoms	• Nausea, vomiting • Insomnia, drowsiness, fatigue • Anxiety, increased heart rate • Gastrointestinal complaints • Tremors • May increase blood pressure • Dry mouth • Blurred vision (see specific medication for specific side effects)	• Exercise • Nutrition – avoidance of food stressors • Talking therapies – usually cognitive behavioural therapy (CBT) • Relaxation and mindfulness • Electroconvulsive therapy (ECT) though rarely

Condition	Medical intervention and desired effect	Side effects	Lifestyle intervention
Stress/anxiety	• Beta blockers • Antidepressants • Benzodiazepines (Anxiolytic/sedative) All used to reduce impact of symptoms	Beta blockers • may raise glucose levels in diabetics • cold extremities • aching muscles • fatigue • fainting • reduced heart rate and blood pressure • sleep disturbance Antidepressant side effects (see depression) Benzodiazepines • Lethargy • Blurred vision • Confusion • Dizziness • Reduced heart rate and respiration rate	• Nutrition – avoidance of food stressors • Medication • Talking therapies – usually CBT • Relaxation and mindfulness
Simple mechanical back pain	• Pain relievers • Anti-inflammatory (NSAIDS) • Antidepressants To reduce impact of symptoms	• Some pain relievers addictive NSAIDS • Gastrointestinal problems • May trigger asthma attack in asthmatics Antidepressant side effects (see depression)	• Functional movement • Posture improvement • Positive mental attitude • Massage • Physiotherapy • Activity – mobility • Ergo-dynamics – chair height and sleep position etc.

Appendix C

Condition	Benefits of exercise	Exercise considerations, risks and restrictions	Sources of information
Hypertension	• Normalise blood pressure • Reduce risk of CHD	• Low intensity and low resistance • Extended warm up and cool down • Avoid isometrics and ensure patient/client is familiar with avoiding Valsalva manoeuvre • Avoid sustained upper body exercise • Alternative methods for intensity monitoring eg, RPE • Promote correct breathing during exercise • Include relaxation • Consider side effects of medication	• British hypertension society • British heart foundation • NICE • Patient UK • NHS Choices • ACSM • Scottish Intercollegiate Guidelines Network (SIGN)
Hypercholesterolaemia	• Improve cholesterol management • Increase HDL:LDL ratio • Reduce risk of CHD	• Low intensity and low resistance • Extended warm up and cool down • Consider side effects of medication	• British heart foundation • NICE • Patient UK • NHS Choices • ACSM • Scottish Intercollegiate Guidelines Network (SIGN)
Chronic obstructive pulmonary disease	• Improve oxygen uptake • Improve ADL • Maintain functional ability	• Respiratory muscle weakness • Breathlessness • Low exercise tolerance • Limited ventilator capacity • Skeletal muscle dysfunction (reduce muscle mass/fibre type) • Be aware of co-morbidities • Avoid exercise in extreme temperatures • Psychological factors • Emphasise posture • Ongoing medical management • Consider side effects of medication	• Patient UK • NICE • British Lung Society • NHS Choices

Condition	Benefits of exercise	Exercise considerations, risks and restrictions	Sources of information
Chronic obstructive pulmonary disease		• Promote ADL • Strengthen lower limbs • Breathing exercises • Promote relaxation • Trunk and spine mobility	
Asthma	• Strengthen respiratory muscles • Improve CV function • Improve expiration • Reduce risk of CHD	• Asthma attack – know how to manage • Must be well controlled; be aware of allergies and environmental triggers • Regular GP checks • Warm, humid environments = ideal (swimming) • Prolonged warm up and cool down • Interval approach is less likely to trigger exercise induced asthma • Changes of progression of symptoms and increased use of reliever to be checked with GP • Monitor intensity • Consider side effects of medication	• Patient UK • NICE • NHS Choices • British Lung Society • Asthma UK
Obesity	• Improve metabolism • Assist weight management • Reduce risk of other CHD factors • Strengthen joints to support weight • Improve mental and emotional state	• Stress on joints and all body systems • Functional limitations • Bulk and size • Emotional sensitivities • Co-morbidities (CHD, diabetes) • Consider side effects of medication • Low intensity, low impact, low weight bearing, slower • Promote ADL	• Patient UK • NICE • NHS Choices • National Obesity Forum

Condition	Benefits of exercise	Exercise considerations, risks and restrictions	Sources of information
Diabetes type 1 and 2	• Improve blood sugar level control • Weight loss – if overweight • Improve insulin sensitivity • Reduce blood pressure • Reduce risk of CHD	• Must be stable and well controlled • Must be able to self-monitor BS levels • Avoid exercise if BS levels >13mmol/l • If BS levels <5.5mmol/l no exercise until BS levels restored • Carry fast acting drinks • Use injection sites away from areas of body to be used during exercise • Plan exercise 1-2 hours after meals • May need to adjust medication dosage prior to exercise • Hyperglycaemia • Hypoglycaemia • Consider side effects of medication	• DAFNE • DESMOND • Diabetes UK • Scottish Intercollegiate Guidelines Network (SIGN) • NICE • NHS Choices
Osteoarthritis	• Boost synovial fluid • Stabilise affected joints • Maintain ROM • Weight loss – if overweight, to reduce weight borne • Reduce risk of CHD • Maintain functional movement	• Consider side effects of medication • Consider discomfort with some exercise positions eg, kneeling, weight bearing on wrists etc. • Promote mobility and flexibility • Strengthen around affected joints • Avoid high impact exercise • Avoid excessive repetitions • Use correct footwear • Avoid prolonged exercise in same positions	• Patient UK • NICE • NHS Choices

Condition	Benefits of exercise	Exercise considerations, risks and restrictions	Sources of information
Rheumatoid arthritis	• Stabilise affected joints during remission • Maintain ROM • Weight loss – if overweight, to reduce weight borne • Reduce risk of CHD • Maintain functional movement	• No exercise during flare up • Consideration to previous joint damage • Avoid high impact exercise • Avoid excessive repetitions • Avoid contact sports • Avoid fast paced movements • Exercise later to avoid morning stiffness • Sensitivity to emotional effects • Consider side effects of medication	• Patient UK • NICE • NHS Choices
Osteoporosis	• Maintain bone density • Reduce risk of CHD • Maintain functional movement	• Depends on progression of conditions • Breaks • Falls • Reduced functional movement • Some exercise positions inappropriate (supine lying) • Environmental safety (avoid falls etc.) may be fear of falling in some environments • Consider side effects of medication • Promote weight bearing, bone loading and strengthening • Promote ADL • Strengthen core to support spine	• National Osteoporosis Society - NOS • Patient UK • NICE • NHS Choices
Depression	• Improved mood • Reduced anxiety • Improved self-esteem and confidence • Increased physical self-worth • Improved body image and cognitive function • Reduce risk of CHD • Maintain functional movement	• Low energy • Low motivation • Lethargy • Consider co-morbidities • Consider side effects of medication	• Mental health Foundation • Depression Alliance • MIND • Journeys • Rethink • Hafal • SANE • Black Dog Tribe • NICE • NHS Choices

Condition	Benefits of exercise	Exercise considerations, risks and restrictions	Sources of information
Stress and anxiety	See depression	• Consider co-morbidities • Consider side effects of medication • Promote relaxation and breathing	• Mental health Foundation • Depression Alliance • MIND • Journeys • Rethink • Hafal • SANE • Black Dog Tribe • NICE • NHS Choices
Simple mechanical back pain	• Improve functional movement and ability • Improve posture • Strengthen core muscles and support of lumbar spine • Maintain mobility and flexibility • Reduce risk of CHD • Maintain functional movement	• Some activities inappropriate and may maintain problem • Promote posture and abdominal engagement • Avoid high impact exercise • Avoid heavy lifting, jerking or jarring movements • Avoid fast twisting • Avoid staying in same position for too long • Avoid double leg raising, straight leg sit ups etc. • Avoid repetitive bending • Promote correct lifting • During episodes of LBP focus on abdominal hollowing rather than flexion exercises • Consider side effects of medication • Consider emotional impact	• Patient UK • NICE • NHS Choices
Joint replacement	• Improve functional movement and ability • Strengthen muscles and maintain stability of new joint • Reduce risk of CHD	• Dislocation • Limited abduction • Avoid adduction • Flexion to 90 degrees • Avoid breaststroke swim action • Seated exercise height with hips above knees • Consider side effects of medication • Consider emotional impact – fear	• Patient UK • NICE NHS Choices

Recommended reading

Durstine, L J & Moore, G (2003) 2nd Edition. ACSM's Exercise Management for Persons with Chronic Diseases and Disabilities. USA. Human Kinetics.

Durstine, L J & Moore, G (2010) 3rd Edition. ACSM's Exercise Management for Persons with Chronic Diseases and Disabilities. USA. Human Kinetics

Lawrence, D and Barnett, L (2006). Fitness professionals: GP Referral Schemes. London. A & C Black

Lawrence, D and Barnett, L (2013).The Complete Guide to Exercise Referral. London. A & C Black

Other useful resources:

ACSM (2010) 8th Edition. ACSM's Guidelines for Exercise Testing and Prescription. USA. Lippincott, Williams and Wilkins.

British Nutrition Foundation (2005). Balance of Good Health (online) , available from: www.nutrition.org.uk.

BHF (2010). Exercise Referral Toolkit. UK. British Heart Foundation

Department of Health (2001). Exercise Referral Systems: A National Quality Assurance Framework (NQAF). London. Department of Health.

Department of Health (2004). At Least Five a Week. Evidence on the impact of physical activity and its relationship to health. A report from the Chief Medical Officer. London. Department of Health.

Department of Health (2011) Start Active, Stay active. Accessed on: 18-2-2012. accessed from: www.bhfactive.org.uk/userfiles/Documents/startactivestayactive.pdf.

NICE (2006) A rapid review of exercise referral schemes to promote activity in adults, accessed on: 5-6-2011. accessed from: www.nice.org.uk/nicemedia/live/11373/43926/43926.pdf

NICE (2006) Physical Activity Guidance. accessed from: 5-6-2011. accessed from: www.nice.org.uk/nicemedia/live/11373/43926/43926.pdf

Websites:

Patient UK: www.patient.co.uk
NHS Choices: www.nhs.uk
NHS National Library for health: www.evidence.nhs.uk
Department of Health: www.dh.gov.uk
The National Osteoporosis Society website - www.nos.org.uk
NICE - www.nice.org.uk
Scottish Intercollegiate Guidelines Network (SIGN): www.sign.ac.uk/
World Health Organisation: www.who.int
British Association of Sports and Exercise Science (BASES): www.bases.org.uk/
The Cochrane Library: www.thecochranelibrary.com
Map of medicine: www.mapofmedicine.com/
Diabetes UK: www.diabetes.org.uk
Mental Health Foundation: www.mentalhealth.org.uk
MIND: www.mind.org.uk
Inclusive Fitness Initiative (IFI): www.inclusivefitness.org
National Institute of Mental Health (NIMH): www.nimh.nih.gov
American Diabetes Society (ADA): www.diabetes.org.uk
Dose Adjustment for Normal Eating (Dafne): www.dafne.uk.com/
Diabetes Education and Self-Management for Ongoing and Newly Diagnosed (Desmond) www.desmond-project.org.uk.
The Society of Chiropodist and Podiatrists (Foot Care for diabetes): www.feetforlife.org
The British Lung Society: www.lunguk.org
Blood Pressure Association: www.bpassoc.org.uk/
National Rheumatoid Arthritis Society: www.nras.org.uk/
Arthritis Research UK: www.arthritisresearchuk.org
Medinfo.co.uk: www.medinfo.co.uk
National Obesity Forum: www.nationalobesityforum.org.uk/
Blood Pressure Association: www.bpassoc.org.uk
British Heart Foundation: www.bhf.org.uk
British Hypertension Society: www.bhsoc.org/
Asthma UK: www.asthma.org.uk/
National Institute of Arthritis and Musculoskeletal and Skin: www.niams.nih.gov
MIMS: www.mims.co.uk/drugs/a/
British National Formulary (BNF): http://bnf.org/bnf/extra/current/450002.htm
BMA New Guide to Medicine

Journals:

British Medical Journal (BMJ)
Journal of Public Health
British Journal of Sports Medicine
Research Quarterly for Exercise and Sport
Psychology of Sport and Exercise
Medicine and Science in Sports and Exercise

Assessment specification

Understanding medical conditions for exercise referral

Assessment element 2 – Medical conditions tables (x5)

The learner is required to successfully complete 5 Medical conditions tables.

The 5 conditions must be selected by the assessor at random from the following:

Hypertension	Hypercholesterolaemia	Asthma	Obesity	Type 1 Diabetes
Type 2 Diabetes	Osteoarthritis	Rheumatoid arthritis	Osteoporosis	Depression
Stress	Anxiety	Simple mechanical back pain	Chronic Obstructive Pulmonary Disease	Joint replacement

Assessment conditions

- The completion of the tables must be invigilated to ensure 'closed book' conditions
- To ensure that the learner has no prior knowledge of their allocated conditions, they must be selected by the assessor at the time of the assessment
- It is permissible to complete the 5 tables over several assessment sessions
- The learner must be permitted a minimum of 10 minutes to complete each table

Assessment decision

- To successfully complete a medical condition table, the learner must supply sufficient evidence to demonstrate that ALL the criteria have been met.
- The assessor must use the supplied 'Competence checklist' to assist them in determining whether the learner has provided sufficient evidence to meet the assessment criterion (ie: demonstrated competence).
- Should a learner refer on any criteria, then the assessor should use their professional judgment to decide if supplemental questioning may be a suitable method to determine final competence or otherwise. However, should this method be chosen, all questions and learner responses must be recorded.

Learners must provide evidence that they possess all the necessary knowledge and understanding to satisfy the requirements of:

- Learning outcome 1 and 2

Assessment element 3 – Activity guidelines tables (x5)

The learner is required to successfully complete 5 Activity guidelines tables.

The 5 conditions must be selected by the assessor at random from the following:

Hypertension	Hypercholesterolaemia	Asthma	Obesity	Type 1 Diabetes
Type 2 Diabetes	Osteoarthritis	Rheumatoid arthritis	Osteoporosis	Depression
Stress	Anxiety	Simple mechanical back pain	Chronic Obstructive Pulmonary Disease	Joint replacement

Assessment conditions

- The completion of the tables must be invigilated to ensure 'closed book' conditions
- To ensure that the learner has no prior knowledge of their allocated conditions, they must be selected by the assessor at the time of the assessment
- It is permissible to complete the 5 tables over several assessment sessions
- The learner must be permitted a minimum of 10 minutes to complete each table

Assessment decision

- To successfully complete a medical condition table, the learner must supply sufficient evidence to demonstrate that ALL the criteria have been met.
- The assessor must use the supplied 'Competence checklist' to assist them in determining whether the learner has provided sufficient evidence to meet the assessment criterion (ie: demonstrated competence)
- Should a learner refer on any criteria, then the assessor should use their professional judgment to decide if supplemental questioning may be a suitable method to determine final competence or otherwise. However, should this method be chosen, all questions and learner responses must be recorded.

Learners must provide evidence that they possess all the necessary knowledge and understanding to satisfy the requirements of:

- Learning outcome 3 and 4

Planning exercise referral programmes with patients (D/503/7494)

Unit aim

This unit will provide the learner with the knowledge and understanding required to plan safe and effective exercise referral programmes for individuals and groups and adapt them when necessary.

The learner will:

1 Understand how to prepare for exercise referral programmes

The learner can:

1.1 Describe a range of resources required to deliver exercise referral programmes for individuals and groups including:

- **Equipment for session**
- **Portable equipment**
- **Fixed equipment**

- Environment for the session:
  - Studio
  - Gym
  - Pool
  - Outdoor
  - Home
  - GP surgery
  - Community centre
  - School
  - Care home
- Portable equipment:
  - Mats
  - Step
  - Bands
  - Weights
  - Balance and stability equipment
- Fixed equipment:
  - CV machines
  - Fixed resistance machines
  - Free weights
  - Benches
  - Use of natural resources

1.2 Explain how to work in environments that are not specifically designed for exercise/physical activity, including:

- Environments:
  - Home
  - GP surgery
  - Residential care home
  - Outdoors
- Considerations:
  - Risk assessment
  - Space
  - Temperature
  - Emergency contacts
  - Personal safety.

The learner will:

2 Understand the importance of long term behaviour change for exercise referral patients

The learner can:

2.1 Explain why it is important for patients to understand the health benefits of structured exercise referral programmes, including:

- Engagement
- Readiness
- Commitment
- Adherence
- Successful outcomes

2.2 Explain why it is important for an exercise referral instructor to work together with patients to agree goals, objectives, programmes and adaptations, including:

- Health benefits (see AC 2.1)
- Albert Mehrabian's communication model: words (6%); intonation (38%) and body language (55%)
- Perception influenced by:
  - Level of rapport
  - Extent to which client feels understood
  - Similarities and differences between client and instructor
- Other factors influencing perception:
  - Strands of equality (age, race, sex, sexual orientation, gender reassignment, disability, beliefs)
  - Culture
  - Class
- Education
- Language
  - Patients' short, medium and long term goals (see AC 4.1)

2.3 Explain the importance of long-term behaviour change in developing patients' health and fitness, including:

- Prevention and management of chronic health conditions for inactive or ineffectively-active individuals with medical conditions
- CHD risk factors (2 or more) or mild to moderate mental health conditions who need structured and supported exercise
- Reduced risk of chronic conditions (CHD, hypertension, stroke, diabetes, obesity, osteoporosis, depression and anxiety)
- Potential prevention and management of chronic conditions
- Improved health and well-being (physical, mental, social, emotional etc.)
- Increased independence
- Weight management
- Reduced risk of premature death
- Reduced risk of falls

See also R/503/7492 Understanding medical conditions for exercise referral

2.4 Explain how to encourage patients to commit themselves to long-term change

- Agreement (see AC 2.1)
- Reasons for change and motivations (see AC2.3).

The learner will:

3 Understand the principles of collecting information to plan an exercise referral programme

The learner can:

3.1 Explain ways to engage and motivate learners in an inclusive learning environment

- Principles:
  - Patients informed agreement to participate (NQAF 2001)
- Content of informed consent document
  - Purpose of activity
  - Risks
  - Responsibilities
  - Questions
  - Signatures

3.2 Summarise the patient information that should be collected when designing an exercise referral programme

- Referral form, informed consent and authority to share confidential information
- Medical and surgical history and medications
- Physical activity history and preferences, current fitness
- Lifestyle behaviours
- Motivation and barriers
- Readiness and goals
- Physical measurements – see ERAG 2011

See also: BHF 2010 toolkit and NQAF 2001 and Professional and Operational Standards for exercise referral, ERAG 2011

3.3 Explain how to select the most appropriate methods of collecting patient information according to patient need, including:

- Methods:
    - Written questionnaires (PAR-Q and psychological questionnaires)
    - Interviews and oral questions
    - Physical assessments (BMI, waist circumference)
    - Health assessments (blood pressure, heart rate)
    - Medical information and medications (transferred by GP)
    - Observation
- Appropriateness with consideration to client's needs:
    - Deaf or partial hearing
    - Blind or partial sighted
    - Physical disability
    - Speakers of other languages

3.4 Explain how to interpret information collected from the patient in order to identify patient needs and goals, including:

- Goals (see AC 4.1)
- Readiness to change
- Risk stratification
- Scope of practice
- Referral to other professionals
- Absolute contraindications
- Programme design and principles of training

3.5 Explain the legal and ethical implications of collecting patient information

- Patient confidentiality to include:
    - Access by relevant parties
    - Factual information
    - Secure storage and transfer

See also: BHF 2010 toolkit and NQAF 2001and 'Professional and operational standards for exercise referral' ERAG 2011

- Data protection
    - All personal information is legally protected - see Data Protection Act 1998
- Information governance
    - Ensures necessary safeguards for, and appropriate use of, patient and personal information

see also NHS information governance at connectingforhealth.nhs.uk.

The learner will:

4 Understand how to identify health related fitness goals with exercise referral patients

The learner can:

4.1 Explain how to identify patients' short, medium and long term goals, in relation to:

- Medical management
- General health and fitness
- Physiological
- Psychological
- Lifestyle
- Social
- Functional ability

4.2 Identify when exercise referral instructors should involve others, apart from their patients, in goal setting

- Scope of practice (according to professional qualifications and risk stratification)
- Issues outside of scope:
    - Medical
    - Nutritional
    - Psychological
    - Risk stratification
    - Contraindications
- Other professionals to include:
    - GP
    - Counsellor
    - Dietician
    - Smoking cessation
    - Other instructors

See also:

BHF 2010 toolkit and NQAF 2001and 'Professional and operational standards for exercise referral' developed by the exercise referral and advisory group (ERAG) 2011.

4.3 Explain how to use specific, measurable, achievable, realistic and time bound (SMART) objectives in an exercise referral programme, including:

- Programme goals
- Design and development
- Review
- Monitoring
- Reporting.

The learner will:

5 Understand how to plan an exercise referral programme with patients

The learner can:

5.1 Explain the absolute contraindications to exercise

- As listed in BHF Toolkit. 2010:93:
  - A recent significant change in a resting ECG, recent myocardial infarction or other acute cardiac event
  - Symptomatic severe aortic stenosis
  - Acute pulmonary embolus or pulmonary infarction
  - Acute myocarditis or pericarditis
  - Suspected or known dissecting aneurysm
  - Resting systolic blood pressure ≥ 180mmhg/ diastolic blood pressure ≥ 100mmhg
  - Uncontrolled / unstable angina
  - Acute uncontrolled psychiatric illness
  - Unstable or acute heart failure
  - New or uncontrolled arrhythmias
  - Other rapidly progressing terminal illness
  - Experiences significant drop in BP during exercise
  - Uncontrolled resting tachycardia ≥ 100 bpm
  - Febrile illness
  - Experiences pain, dizziness or excessive breathlessness during exertion
  - Any unstable, uncontrolled condition

5.2 Summarise the key principles of designing exercise referral programmes to achieve short, medium and long term goals, including the order and structure of sessions

- Session structure:
  - Warm up
  - Main session
  - Cool down
- Principles of training: (see AC 6.1)
- Session content/exercise selection
  - Components of fitness: (see AC 5.3)
- Design considerations:
  - Length of components
  - Prioritised components of fitness
  - Choice of exercise, order of exercises
  - Intensity according to client conditions and needs
  - One-to-one or group sessions
- Goals: (see AC 4.1)
- Exercise environment
  - Appropriate for the activity and the individual(s)

5.3 Describe a range of safe and effective exercises/physical activities to develop:

- **Cardiovascular fitness**
- **Muscular fitness**
- **Flexibility**
- **Motor skills**
- **Core stability**

Cardiovascular fitness:

- Walking
- Swimming
- Exercise in water
- CV machines
- Group exercise
    - Dance (ballroom, Bollywood etc.)
    - Movement based
    - Non-impact aerobics (NIA)

Muscular fitness:

- Resistance training (body weight)
- Fixed resistance
- Small equipment
- Yoga
- Pilates
- Seated/chair-based
- Flexibility:
    - Mobility
    - Stretching
    - Yoga
    - Pilates

Motor skills:

- Activities specific to different components eg, balance, co-ordination etc.

Core stability:

- Pilates
- Stability exercises

5.4 Explain how to include physical activities as part of patient's lifestyle to complement exercise sessions, including:

- Activities for daily living: (getting dressed, walking, etc.)
- Other complementary activities: (dancing classes etc.)
- Lifestyle integration: (active travel time of day etc.)
- Schedules:
    - Diaries
    - Calendars
    - Reminders

5.5 Identify when it might be appropriate to share the programme with other professionals

See AC 4.1

The learner will:

6 Understand how to adapt an exercise referral programme with patients

The learner can

6.1 Explain how the principles of training can be used to adapt the programme where:

- **Goals are not being achieved**
- **New goals have been identified**

- To include, progression/regression of the following factors:
  - Frequency
  - Intensity:
    - Repetitions
    - Rate
    - Resistance
    - Rest
    - Range of movement
  - Time:
    - Whole session
    - Components
  - Type:
    - Modify or change exercise modality or exercises
  - Adherence:
    - Lifestyle and behaviour strategies

6.2 Describe appropriate training systems and their use in providing variety and in ensuring programmes remain effective, including:

- Cardiovascular:
  - Continuous
  - Intervals
- Resistance:
  - Circuit
  - Single
  - Multiple sets
- Flexibility:
  - Assisted
  - Dynamic
  - Static (modified and adapted)

6.3 Explain why it is important to keep accurate records of changes including the reasons for change, including:

- Monitoring and evaluation and legalities
- Reasons for change: progression and/or regression
- Client feedback and preference
- Goal review
- Instructor evaluation

- Promote adherence/motivation
- Justify initial spend and future funding as a value for money programme
- Goals are not being achieved
- Identification of new goals

6.4 Explain when it may be appropriate to share changes to exercise referral programmes with other professionals

See AC 4.2.

The learner will:

7 Be able to collect information about exercise referral patients

The learner can:

7.1 Establish a rapport with patients

- Including how to demonstrate:
    - Verbal and non-verbal communication skills
    - Appropriate appearance
    - Positive body language
    - Verbal checks and types of questioning (open, closed etc.)
    - Observational skills
    - Active listening
    - Empathy
    - Trustworthiness
    - Positive regard for patients' welfare

7.2 Explain own role and responsibilities to patients, including:

- Safe and effective exercise design and delivery and monitoring

7.3 Collect the information needed to plan an exercise referral programme using methods appropriate to the patients and their condition/s

See AC 3.3 and 3.4 for underpinning knowledge of methods and content

7.4 Show sensitivity and empathy to patients and the information they provide

See AC 7.1

7.5 Record the information using appropriate formats in a way that will aid analysis

Record

See AC 3.3 and 3.4 for underpinning knowledge of methods and content

Analysis of:

- Profile and attendance
- Consultation and assessment outcomes
- Programme/activities
- Measurements

7.6 Treat confidential information correctly

- In accordance with:
    - Data Protection Act 1998
    - NHS information governance (connectingforhealth.nhs.uk).

The learner will:

8 Be able to agree goals with exercise referral patients

The learner can:

8.1 Work with patients to agree short, medium and long-term goals appropriate to their needs

See LO5 for underpinning knowledge

8.2 Ensure the goals are:

- **Specific, measurable, achievable, realistic and time bound**
- **Consistent with industry good practice**
- How to monitor and measure results against programme goals
- Industry good practice
    - 'Professional and operational standards for exercise referral' ERAG 2011

8.3 Agree with patients their needs and readiness to participate

- Methods of establishing and recording informed consent.

The learner will:

9 Be able to plan an exercise referral programme with exercise referral patients

The learner can:

9.1 Plan specific outcome measures, stages of achievement and exercises/physical activities that are:

- **'Appropriate to patients' medical condition/s, goals and level of fitness**
- **Consistent with accepted good practice**

See AC 3.2 and AC 4.3

9.2 Ensure appropriate components of fitness are built into the programme

See AC5.3

9.3 Apply the principles of training which are appropriate to exercise referral patients and their condition/s to help achieve short, medium and long term goals

See AC4.1, AC4.3, AC5.2

9.4 Agree the demands of the programme with patients

See AC 3.2

9.5 Agree a timetable of sessions with patients

See AC 3.2

9.6 Agree appropriate evaluation methods and review dates with patients

9.7 Identify the resources needed for the programme, including the use of environments not designed for exercise

See AC 1.1 and AC1.2

9.8 Record plans in a format that will help patients and other professionals involved to implement the programme

See AC 3.2, AC 3.3

9.9 Agree how to maintain contact with exercise referral patients between sessions

See AC 3.3.

The learner will:

10 Be able to manage an exercise referral programme with patients

The learner can:

10.1 Monitor integration of exercise referral programme and wider physical activity

See AC 5.4

10.2 Provide alternatives to the programmed exercises/physical activities if patients cannot take part as planned

See AC 6.1 and A C6.3

10.3 Monitor patients' progress using appropriate methods

See AC 7.5

10.4 Write a letter to a healthcare professional communicating appropriate information and using accurate language

The learner will:

11 Be able to review progress with exercise referral patients

The learner can:

11.1 Explain the purpose of reviewing progress to patients

See AC 2.2

11.2 Review short, medium and long term goals with patients at agreed points in the programme, taking into account any changes in circumstances

11.3 Encourage patients to give their own views on progress

See AC 3.4

11.4 Use suitable methods of evaluation that will help to review patient progress against goals and initial baseline data

See AC 10.3

11.5 Give feedback to patients during their review that is likely to strengthen their motivation and adherence

See AC 2.4

11.6 Agree review outcomes with patients and other professionals

See AC 2.2, AC 5.5

11.7 Keep an accurate record of reviews and their outcome

See AC 9.8.

The learner will:

12 Be able to adapt an exercise referral programme with patients

The learner can:

12.1 Identify goals and exercises/physical activities that need to be redefined or adapted

See LO6 for underpinning knowledge

12.2 Agree adaptations, progressions or regressions to meet patients' needs to optimise achievement

See LO6 for underpinning knowledge

12.3 Identify and agree any changes to resources and environments with the patient

See LO6 for underpinning knowledge

12.4 Introduce adaptations in a way that is appropriate to patients, their needs and medical condition/s

See LO6 for underpinning knowledge

12.5 record changes to programme plans to take account of adaptations

See LO6 for underpinning knowledge

12.6 Monitor the effectiveness of adaptations and update the programme as necessary

See LO6 for underpinning knowledge.

Planning exercise referral programmes with patients

Assessment element 4 – worksheet

Learners are required to complete a worksheet on the 'Planning exercise referral programmes with patients'. This can be completed as part of a course or as part of summative assessment.

Learners must provide evidence that they possess all the necessary knowledge and understanding to satisfy the requirements of:

- Learning outcome 2 : All assessment criteria
- Learning outcome 3 : Assessment criteria 3.2 - 3.5
- Learning outcome 4 : Assessment criteria 4.1, 4.3
- Learning outcome 5 : Assessment criteria 5.1, 5.2
- Learning outcome 6 : Assessment criteria 6.1, 6.3

If they fail to provide sufficient evidence through completion of the task, supplementary questions will need to be asked by the assessor to confirm competence.

All supplementary questions and answers must be recorded.

The worksheet:

- must be the learner's sole work and group completion is not permitted
- may be completed over a period of time
- may be completed away from the centre (ie, as a homework task)
- may be marked by the course tutor or an independent assessor

Assessment element 5 – consultation

The learner is required to complete a consultation with an exercise referral patient during which time they should gain sufficient information to complete the patient profile, offer advice and agree an appropriate activity/exercise programme with them.

Suitable patient

The leaner should source an exercise referral patient with whom they can work for sufficient time to enable them to gather information to plan, agree, deliver and adapt their programme as necessary.

In the event that a real patient cannot be found, a hypothetical patient may be used.

The patient must have minimum of TWO conditions from the table below

Hypertension	Obesity	Rheumatoid arthritis	Anxiety
Hypercholesterolaemia	Diabetes type 1	Osteoporosis	Simple mechanical back pain
Chronic obstructive pulmonary disease	Diabetes type 2	Depression	Joint replacement
Asthma	Osteoarthritis	Stress	

However care must be taken to ensure that the selected patient does not possess two conditions which make them high risk or outside the scope of practice for a Level 3 exercise referral instructor. (See: Professional practice for exercise referral instructors (Y/503/7493) 'principles of risk stratification in exercise referral'.)

Information required

As a minimum the learner must obtain the following information from their patient:

Referral form	Physical activity history	Current fitness level
Transfer of medical information documentation	Physical activity preferences	Stage of readiness
Medical and surgical history	Motivation and barriers to participation	Personal and behavioural goals
Medications	Osteoarthritis	Physical measurements

Advice and planning

The learner must then use the information gathered to discuss and agree short, medium and long-term goals appropriate to the patient's needs and medical conditions for at least three of the following aspects:

Medical management	General health and fitness	Physiological
Psychological	Lifestyle	Social
Functional ability		

Preparation

It is advised that the learner then prepares a written script prior to their patient consultation which may then be used as a guideline/'aide-memoire' to help ensure that they include the assessment criteria which is detailed on the assessment checklist.

Should they not cover any areas sufficiently, supplementary questioning by the assessor may be used.

All supplementary questions and answers must be recorded.

Assessment element 6 – exercise referral programme

Following the consultation the learner should write a structured exercise referral programme using the documentation contained within their LAR which should:

- Identify the resources required, including the use of environments not designed for exercise.
- Plan specific outcome measures, stages of achievement and exercises/physical activities which are:
    - Appropriate to their patient's medical condition/s, goals and level of fitness.
    - Consistent with accepted good practice.
- Ensure that the appropriate components of fitness are built into the programme.
- Apply the principles of training which are appropriate to exercise referral patients and their condition/s to help achieve short, medium and long term goals.
- Describe/provide guidelines regarding any equipment which may be used.

Length of programme

Since further assessment elements will require the monitoring of the patient's progress and adapting programme as necessary, it is recommended that this plan lasts a minimum of 4 weeks.

Assessment element 7 – review

Arrangements should be made for the learner to review the programme with their patient after approximately 4 weeks.

Note: if a hypothetical patient is used then this time frame may be simulated.

This may be conducted either remotely or face to face and will require the completion of the patient review questionnaire.

Patient review questionnaire

Prior to submitting the questionnaire to their patient they should complete the sections which state:

- The reason why they are requesting the review
- A minimum of four of the current programme's goals.

Programme review and adaptations

Upon receipt of the completed questionnaire the learner should then monitor the patient's responses, consider any actions which are necessary or appropriate and:

- Detail their recommendations on the patient review questionnaire and complete the "adaptations to programme record" accordingly.
- Give motivational feedback to patient.

Assessment element 8 – letter to a healthcare professional

The learner must compose a letter to a healthcare professional informing them of their patient's progress in meeting the pre-planned goals

Instructing exercise with referred patients (L/503/7491)

Unit aim

This unit will cover the knowledge, understanding and skills required by the learner when instructing exercise for referred patients.

The learner will:

1 Understand how to instruct exercise to exercise referral patients

The learner can:

1.1 Explain the importance of verbal and non-verbal communication when instructing patients, including:

- Albert Mehrabian's communication model: words (6%); intonation (38%) and body language (55%)
- Perception influenced by:
    - Level of rapport
    - Extent to which client feels understood
    - Similarities and differences between client and instructor
- Other factors influencing perception:
- Strands of equality (age, race, sex, sexual orientation, gender reassignment, disability, beliefs)
- Culture
    - Class
    - Education
    - Language

1.2 Describe how to adapt communication to meet patients' needs

- Importance of developing rapport
    - Appropriate appearance
    - Active listening
    - Empathy
    - Trustworthiness
    - Positive regard for patients' welfare
    - Positive body language
- Methods of questioning (open, closed etc.)
- Verbal checks
- Appropriate used of terminology
- Use of demonstrations

See also AC 1.1

1.3 Evaluate different methods of maintaining patients' motivation, especially when patients are finding exercises difficult, including:

- Modification and adaptation to meet needs
- Praise and encouragement
- Progress reviews and achievements
- Positive feedback
- Reasons for change
    - Health benefits
- Goal setting

1.4 Explain the importance of correcting patient technique, including:

- Promoting safety and effectiveness
- Improving performance
- Assisting goal achievement
- Reducing risk of injury or medical emergency.

The learner will:

2 Understand how to adapt exercise to meet the needs of exercise referral patients

The learner can:

2.1 Explain why it is important to monitor individual progress if more than one patient is involved in the session

See AC 1.4

2.2 Describe different methods of monitoring patients' progress during exercise, including groups of patients, including:

- Observation
- RPE
- Heart rate monitoring
- Feedback
- Question and answer
- Self-monitoring

2.3 Explain when it may be necessary to adapt planned exercises to meet patients' needs

See AC 1.4

- According to medical condition

2.4 Explain how to adapt exercise/exercise positions as appropriate to individual patients and the environment, to include:

- Principles of training
    - Frequency
    - Intensity:
        - Repetitions
        - Rate
        - Resistance
        - Rest
        - Range of movement
        - Levers
        - Centre of gravity
    - Time:
        - Whole session
        - Components
    - Type:
        - Modify or change exercise modality or exercises
- Environmental considerations
    - Risk assessment
    - Space
    - Temperature
    - Emergency contacts
    - Personal safety
- Standing
- Seated
- Prone
- Supine

2.5 Explain how to modify the intensity of exercise according to the needs and response of the patient

See AC 2.4.

The learner will:

3 Understand how to review exercise referral sessions with patients

The learner can:

3.1 Explain why exercise referral instructors should give patients feedback on their performance during a session, including:

- Motivation
- Encouragement
- Improved performance
- Ensuring safe and effective activity
- Promoting independent activity
- Reduced dependence
- Promoting adherence
- Retention

3.2 Explain why patients should be given the opportunity to ask questions and discuss their performance, including:

- Person-centred approach
- Locus of control
    - Promoting independence and reduce dependence
    - Developing knowledge and understanding
    - Promoting adherence
    - Commitment and motivation
- Maintenance of "informed consent"
    - Opportunity to voice of any concerns
    - Clarification that aims of programme are consistent with patient's expectations

3.3 Explain how to give patients feedback on their performance in a way that is accurate but maintains patient motivation/commitment

- Maintaining rapport (see AC 1.2)
- Positive feedback
    - Praise sandwich
    - Positive language
    - Factual and descriptive
    - Constructive and developmental

3.4 Explain why patients need to see their progress against goals, including:

- Motivation
- Adherence
- Commitment to change
- Opportunity to set new goals and targets

3.5 Explain why patients need information about future exercise and physical activity, both supervised and unsupervised

See AC 3.4.

The learner will:

4 Be able to prepare resources for the exercise referral sessions

The learner can:

4.1 Select a range of exercises/physical activities to help patients achieve their objectives and goals

Objectives and goals

See unit 'Planning exercise referral programmes with patients' (D/503/7494) LO4 for the requisite underpinning knowledge

Range of activities

See unit 'Planning exercise referral programmes with patients' (D/503/7494) LO5 for the requisite underpinning knowledge

4.2 Obtain and prepare the resources needed for planned exercises/physical activities

See unit 'Planning exercise referral programmes with patients' (D/503/7494) LO1 for the requisite underpinning knowledge.

The learner will:

5 Be able to prepare patients for exercise referral sessions

The learner can:

5.1 Help patients feel at ease in the exercise environment

- Communication skills (see AC 1.2)

5.2 Explain the planned objectives and exercises/physical activities to patients

- Communication skills (see AC 1.2)

Objectives and goals

See unit 'Planning exercise referral programmes with patients' (D/503/7494) LO4 for the requisite underpinning knowledge.

Range of activities

See unit 'Planning exercise referral programmes with patients' (D/503/7494) LO5 for the requisite underpinning knowledge.

5.3 Explain to patients how objectives and exercises/physical activities support their goals and are appropriate to their condition

- Communication skills (See AC 1.2)
- Appropriate to condition

See unit 'Understanding Medical Conditions for Exercise Referral' (R/503/7492) LO4 for the requisite underpinning knowledge

5.4 Explain the physical and technical demands of the planned exercises/physical activities to patients, including:

- Increased heart rate, breathing rate, temperature
- Muscle aches and delayed onset of muscular soreness (DOMS)
- Co-ordination and balance demands

5.5 Explain to patients how planned exercise/physical activity can be progressed or regressed to meet their goals

- Methods of progression/regression (see AC 2.4)

5.6 Assess patients' state of readiness and motivation to take part in the planned exercises/physical activities

- Transtheoretical model of behaviour change
    - Pre-contemplation (not ready)
    - Contemplation
    - Preparation
    - Action
    - Maintenance
    - Termination

5.7 Negotiate and agree with patients any changes to the planned exercises/physical activities that:

- **Meet their goals and preferences**
- **Enable them to maintain progress**

See unit 'Planning exercise referral programmes with patients' (D/503/7494) AC6.1 and 6.2 for the requisite underpinning knowledge.

5.8 Record changes to patient's exercise referral programmes, including:

- Details
- Dates
- Reasons/rationale
- Principles of record keeping

See unit 'Professional practice for exercise referral instructors' (Y/503/7493) AC 5.1 and 5.2 for the requisite underpinning knowledge.

The learner will:

6 Be able to instruct and adapt planned exercises to exercise referral patients

The learner can:

6.1 Use motivational styles that are:

- **Appropriate to the patients**
- **Consistent with accepted good practice**

6.2 Explain the purpose and value of a warm-up to patients

- Using language and terminology appropriate to patient

Purpose

- Preparation of mind and body
- Joint mobility
- Increased blood flow to muscles
- Elevated heart rate
- Promote co-ordination

Value

- Minimise risk of:
    - Injury
    - Circulatory shock

6.3 Provide warm-ups appropriate to the patients, planned exercise and the environment

6.4 Make best use of the environment in which the patients are exercising

6.5 Provide instructions, explanations and demonstrations that are technically correct, safe and effective, including:

- Postural and joint alignment – static and moving

6.6 Adapt verbal and non-verbal communication methods to make sure patients understand what is required

6.7 Ensure patients can carry out the exercises safely on their own using:

- Observation
- Questioning
- Understanding checks

6.8 Analyse the performance of patients, providing positive reinforcement throughout by:

- Adopting appropriate teaching positions
- Ensuring patient(s) technique(s) are in accordance with recognised best practice/referring authorities guidelines

6.9 Correct exercise technique at appropriate points

Corrections to include:

- Tempo
- Joint alignment
- Intensity
- Safety considerations (to both patient(s) and others)

Appropriate points

- Timely
- Immediately
- During session feedback

6.10 Progress or regress exercises according to patients' performance

- During session
- Future planning
- Methods (see AC 2.4)

6.11 Monitor and modify the intensity of exercise appropriate to patient and their condition, including:

- Monitoring:
    - Observation
    - Questions and answer
    - Heart rate
    - RPE
    - Talk test
    - Modifying: (see AC 2.4)
    - Conditions:

See those defined in unit 'Understanding medical conditions for exercise referral'(R/503/7492).

The learner will:

7 Be able to bring exercise referral sessions to an end

The learner can:

7.1 Allow sufficient time for the closing phase of the session, with consideration to:

- Patient(s)' medical condition
- Medications in use
- Purpose of phase

7.2 Explain the purpose and value of cool-down activities to patients

- Using language and terminology appropriate to patient, to include:
    - Return to pre-exercise state
    - Minimising risk of blood pooling by promoting venous return
    - Maintain and develop flexibility/ROM
    - Relaxation

7.3 Select cool-down activities according to the type and intensity of physical exercise, patient needs and environment

7.4 Provide patients with feedback and positive reinforcement, including:

- During session
- After session (de-brief)
- Methods of giving positive feedback (see AC 3.3)

7.5 Explain to patients how their progress links to their goals

- By referring to pre-agreed SMART goals

7.6 Allow patients the opportunity to ask questions and discuss their performance

- Sufficient time
- Appropriate environment
- Active listening

7.7 Inform patients about future opportunities for exercise and physical activity including:

- Safe and effective exercises/physical activities to develop:
    - Cardiovascular fitness
    - Muscular fitness
    - Flexibility
    - Motor skills
    - Core stability
- Physical activities as part of patient's lifestyle to complement exercise sessions
    - Activities for daily living: (getting dressed, walking etc.)
    - Other complementary activities: (dancing classes etc.)

See unit 'Planning exercise referral programmes with patients' (D/503/7494) AC 5.3 and 5.4

7.8 Leave the environment in a condition suitable for future use, with consideration to:

- Suitability for use by other users
- Health and safety legislation
- Storage of equipment.

The learner will:

8 Be able to review exercise referral sessions

The learner can:

8.1 Review the outcomes of working with patients including their feedback using:

- Patients' short, medium and long term goals and outcomes
- Methods and reasons (see LO 3)
- Appropriate methods of communication

See unit 'Planning exercise referral programmes with patients' (D/503/7494) AC 7.1 for requisite knowledge

8.2 Identify:

- **How well the sessions met patients' goals**
- **How effective and motivational the relationship was with patients**
- **How well the instructing styles matched patients' needs**

See AC 8.1

8.3 Identify how to improve personal practice, including:

- Reflective practice
- Feedback from others
- Continuing professional development

8.4 Explain the value of reflective practice, including:

- Identification of own strengths and weaknesses
- Strategy for personal development

Assessment specification

Instructing exercise with referred patients

Assessment element 9 – session plan

The learner must produce a session plan for an exercise referral patient to be used for an observed assessment (see element 9).

Suitable patient (see also element 4)

In the event that a real patient cannot be found, a hypothetical patient may be used.

The patient must have minimum of TWO conditions from the table below:

Hypertension	Obesity	Rheumatoid arthritis	Anxiety
Hypercholesterolaemia	Diabetes type 1	Osteoporosis	Simple mechanical back pain
Chronic obstructive pulmonary disease	Diabetes type 2	Depression	Joint replacement
Asthma	Osteoarthritis	Stress	

However care must be taken to ensure that the selected patient does not possess two conditions which make them high risk or outside the scope of practice for a Level 3 exercise referral instructor.
(See: Professional practice for exercise referral instructors (Y/503/7493) 'principles of risk stratification in exercise referral')

Session plan

This plan must only be based upon the learner's own area of expertise

For example:

- Circuit training
- Gym
- Exercise to music
- Water-based
- Walking
- Pilates
- Yoga

It should adhere to the planning guidelines contained within unit Instructing exercise with referred patients (L/503/7491) and contain details of:

- Patient's medical condition(s)
- Purpose of session
- Environment/equipment required
- Proposed activities/exercises
- Methods of monitoring
- Adaptations
- Progressions/regressions
- Components of session (warm up, main component, cool down)

Assessment element 10 – observation

The learner must instruct their patient through the pre-planned session, following which they should conduct a patient feedback session and explain to the assessor how this information could be used to improve their own personal practice.

Assessment element 11 – worksheet

Learners are required to complete a worksheet on the 'Instructing exercise referral programmes with patients'. This can be completed as part of a course or as part of summative assessment.

Learners must provide evidence that they possess all the necessary knowledge and understanding to satisfy the requirements of:

- Learning outcome 1 : All assessment criteria
- Learning outcome 2 : All assessment criteria
- Learning outcome 3 : All assessment criteria

If they fail to provide sufficient evidence through completion of the task, supplementary questions will need to be asked by the assessor to confirm competence.

All supplementary questions and answers must be recorded.

The worksheet:

- must be the learner's sole work and group completion is not permitted
- may be completed over a period of time
- may be completed away from the centre (ie, as a homework task)
- may be marked by the course tutor or an independent assessor.

Anatomy and physiology for exercise and health (A/600/9051)

Unit aim

This unit covers the knowledge an instructor needs about anatomy and physiology relating to exercise programming for a range of clients.

The learner will:

1. Understand the heart and circulatory system and its relation to exercise and health

The learner can:

1.1 Explain the function of the heart valves, to include:

- Atrioventrical valves (AV valves)
  - Bicuspid (mitral)
  - Tricuspid
- Semi–lunar valves
  - Aortic valve
  - Pulmonary valve

1.2 Describe coronary circulation, to include:

- Function
- Main coronary arteries
- Blood supply to the myocardium
- Myocardium's dependency on oxygen

1.3 Explain the effect of the disease process on the structure and function of blood vessels, to include:

- Arteriosclerosis
- Atherosclerosis
- Lifestyle changes that can be adhered to in order to decrease the risk of arteriosclerosis

1.4 Explain the short and long-term effects of exercise on blood pressure, including the Valsalva effect, to include:

- Short-term effects (while exercising) on diastolic and systolic pressure blood pressure
- Long-term effects (after a period of regular training) on resting and exercising diastolic and systolic blood pressure
- The Valsalva effect and the importance of correct breathing patterns during strenuous exercise, particularly for those with existing cardiovascular issues

1.5 Explain the cardiovascular benefits and risks of endurance/aerobic training, to include:

- The benefits to:
  - Heart
  - Blood vessels (including capillarisation)
  - Blood
- Risks to:
  - Heart in relation to fitness level
  - Low body fat % in some athletes
- Identify the potential health benefits of cardiovascular training to the body, to include:
  - Decreased risk of coronary heart disease (CHD), type 2 diabetes and other chronic degenerative conditions
  - Reduction/maintenance of body fat levels
  - Modest reductions in high blood pressure
  - Improved blood cholesterol profile
- Identify the potential health risks of cardiovascular training, to include:
  - Increased workload on the heart
  - Decreased body fat below recommended levels in some athletes

1.6 Define blood pressure classifications and associated health risks, to include:

- Hypotension
- Normal
- Pre-high blood pressure
- High blood pressure (hypertension).

The learner will:

2. Understand the musculoskeletal system and its relation to exercise

The learner can:

2.1 Explain the cellular structure of muscle fibres, to include:

- The muscular structure, learned in level 2
- How the connective tissue of muscle merges into tendon that is composed of regular collagen fibres
- The role of motor units

2.2 Describe the sliding filament theory, to include the roles of the following:

- Sarcomere
- Actin and myosin
- Calcium in producing muscle contraction
- ATP in producing muscle contraction

2.3 Explain the effects of different types of exercises on muscle fibre type, to include:

- Type 1 slow oxidative – SO
- Type 2a fast oxidative/glycolytic – FOG
- Type 2b fast glycolytic – FG
- How recruitment patterns vary, depending on:
    - Exercise intensity
    - Individual fitness level/skill level
    - Firing threshold
- The ability for the muscle fibres to adapt with increased long-term activity and detraining, to include:
    - Hypertrophy increases in speed and contractile efficiency
    - Adaptability towards a lesser proportion to type 2b to type 2a in both endurance and high-intensity resistance training
- The theory of hyperplasia

2.4 Identify and locate the muscle attachment sites for the major muscles of the body, to include:

- Adductor group
    - Adductor magnus
    - Adductor brevis
    - Adductor longus
    - Pectinius
    - Gracilis
    - Sartorius
- Abductor group
    - Gluteus medius
    - Gluteus minimus
    - Piriformis
    - Tensor fascia latae
- Abdominal group
    - Internal obliques
    - External obliques
    - Rectus abdominis
    - Transverse abdominis
- Quadriceps group
    - Rectus femoris
    - Vastus medialis
    - Vastus intermedius
    - Vastus lateralis
- Hamstring group
    - Biceps femoris
    - Semimembranosus
    - Semitendinosus
- Hip flexor group
    - Iliacus
    - Psoas major
- Rotator cuff
    - Teres minor

    - Supraspinatus
    - Subscapularis
    - Infraspinatus
- Shoulder girdle
    - Levator scapulae
    - Pectoralis minor
    - Serratus anterior
    - Trapezius
    - Rhomboids major/minor
    - Teres major
- Spine extensors
    - Erector spinae: iliocostalis, longissimus, spinalis
    - Multifidus
    - Quadratus lumborum
- Other muscles from level 2
    - Gastrocnemius
    - Soleus
    - Pectoralis major
    - Latissimus dorsi
    - Biceps, brachialis
    - Triceps
    - Tibialis anterior
    - Deltoids (anterior, medial, posterior)
    - Gluteus maximus

2.5 Name, locate and explain the function of skeletal muscle involved in physical activity

As identified in AC 2.4

2.6 Identify the anatomical axis and planes with regard to joint actions and different exercises, to include:

- Frontal (coronal)
- Sagittal
- Transverse

2.7 Explain the joint actions brought about by specific muscle group contractions, to include:

- Terms from level 2
- New terms, not included at level 2, to describe joint actions as follows:
    - Pronation
    - Supination
    - Inversion
    - Eversion
    - Internal (medial) rotation
    - External (lateral) rotation
    - Opposition

2.8 Describe the joints/joint structure with regard to a range of motion/movement and injury risk, to include:

- Shoulder girdle and shoulder joint
- Elbow joint and forearm
- Wrist and hand
- Hip joint
- Knee and lower leg
- Vertebral column
- Ankle and foot
- Synovial joint types as at level 2, plus:
    - Condyloid/ellipsoid
    - Saddle

2.9 Describe joint movement potential and joint actions, to include:

- Shoulder girdle and shoulder joint
- Elbow joint and forearm
- Wrist and hand
- Hip joint
- Knee and lower leg
- Vertebral column
- Ankle and foot

2.10 Describe the structure of the pelvic girdle and associated muscles and ligaments, to include:

- The name of the specific bones that form the pelvic girdle
- The articulations at the following point:
    - Pubis symphysis
    - Sacroiliac joint
- The importance of the transmission of impact during weight-bearing activities
- The differences between the male and female pelvis, including the angle of the femur in females and increased risk of damage to hip, knee, ankle and foot
- The muscles that stabilise the pelvic region.

The learner will:

3. Understand postural and core stability

The learner can:

3.1 Describe the structure and function of the stabilising ligaments and muscle of the spine, to include:

- Local muscles (deep muscles) and global muscles (superficial muscles):
    - Rectus abdominis
    - Erector spinae – iliocostalis, longissimus, spinalis
    - External obliques
    - Internal obliques
    - Transverse abdominis
    - Multifidus
    - Pelvic floor
    - Quadratus lumborum

NB: The term `local` refers to muscles located deep within the body and around the spine. They are recruited prior to gross movement, preventing unwanted movement. The term `global` refers to muscles that are located superficially and that produce and prevent a specific joint action. During exercise, these muscles usually challenge local muscle strength and stability.

Source: Mark Comerford and Sarah Mottram, Kinetic Control

- The role of the muscles listed in AC 3.1 in maintaining correct spinal alignment
- The ligamentous structures supporting the spine
- The role of spinal ligaments in core stability
- The role of intra-abdominal pressure in core stability
- The role of the thoraco-lumbar fascia in core stability

3.2 Describe local muscle changes that can take place due to insufficient stabilisation, to include:

- Muscle imbalance, particularly between large movement-producing muscles and smaller stabilisers
- Overworking of dominant muscles
- Tightening of dominant muscles
- Underuse of weaker muscles

3.3 Explain the potential effects of abdominal adiposity and poor posture on movement efficiency, to include:

- The biomechanical implications of different centres of gravity in relation to posture and adipose tissue
- The effect of different posture and patterns of adiposity on centre of gravity, and therefore on exercise performance, balance, stability and alignment
- The benefits of improved core stability, to include:
    - Reduced risk of injury
    - Improved application of power by the limbs in an unsupported environment
    - Improved aesthetics
    - Improved motor skills

3.4 Explain the potential problems that can occur as a result of postural deviations, to include:

- Abnormal degrees of curvature in the spine (kyphosis, lordosis, scoliosis) and the importance to exercise safety and design of appropriate activities in relation to this
- A range of factors that contribute to lack of postural control, to include:
    - Lack of core stability
    - Hereditary
    - Lifestyle
    - Ageing process
    - Muscle imbalance
    - Self-esteem
- Reasons and potential causes of back pain as a result of postural deviations
- The importance of maintaining correct spinal curvature at cervical, lumbar and thoracic vertebrae for:
    - Prevention of joint and ligament damage within the vertebral column
    - Performing weight-bearing exercise and biomechanical efficiency
    - Transmission of stressors transmitted through the pelvis and caused by impact

3.5 Explain the impact of core-stabilisation exercise and the potential for injury/aggravation of problems

3.6 Explain the benefits, risks and applications of the following types of stretching:

- Static (passive and active)
- Dynamic
- Proprioceptive neuromuscular facilitation (PNF).

The learner will:

4. Understand the nervous system and its relation to exercise

The learner can:

4.1 Describe the specific roles of:

The central nervous system (CNS), to include: brain and spinal cord for the following:

- Receiving and storing information
- Collating information and decision making
- Initiating instructions for bodily activities
- Improvements in the nervous system with regular activity

The peripheral nervous system (PNS), including somatic and autonomic systems, to include:

- Sensory neurons (afferents)
- Motor neurons (efferents)

- The way in which the PNS is divided into somatic and autonomic systems and their roles:
    - Somatic – external sensors (eg, sight, hearing)
    - Autonomic – internal sensors (eg, chemoreceptors, baroreceptors)
- The balance between the two opposing branches of the autonomic system and homeostatis:
    - Sympathetic nerves
    - Parasympathetic nerves
    - The role of homeostasis

4.2 Describe the nervous control and transmission of nervous impulse, to include:

- Dendrites of a cell body receive incoming signals
- Threshold is reached; impulse triggered
- Electrochemical wave travels along axon
- Synapses

4.3 Describe the structure and function of a neuron, to include:

- Cell body
- Dendrites
- Axon
- Myelin sheath
- Synapses

4.4 Explain the role of a motor unit, to include:

- The functional contractile unit of a muscle

4.5 Explain the process of motor unit recruitment and the significance of a motor unit's size and number of muscle fibres, to include:

- The role of exercise intensity on the recruitment sequence of different motor units, according to:
    - Size of the motor unit
    - Specific movement pattern
    - Firing threshold
    - Level of skill

4.6 Explain the function of muscle proprioceptors and the stretch reflex, to include:

- Muscle spindles
- Golgi tendon organs

4.7 Explain reciprocal inhibition and its relevance to exercise, to include:

- Its relevance for stretching

4.8 Explain the neuromuscular adaptations associated with exercise/training, to include:

- Strengthening/growing new connections within the nervous system
- Speeding up the frequency of nerve impulses to motor units to stimulate stronger muscular contractions
- Improving synchronous recruitment of motor units to achieve stronger muscular contractions
- Improving inter-muscular coordination to improve application of force
- Common movement patterns becoming autonomic, freeing up the conscious mind for other tasks

4.9 Explain the benefits of improved neuromuscular coordination/efficiency to exercise performance, to include:

- The improvement of central nervous system processing, including:
    - Reaction time
    - Balance
    - Coordination
    - Spatial awareness
    - Speed
    - Agility.

The learner will:

5. Understand the endocrine system and its relation to exercise and health

The learner can:

5.1 Describe the functions of the endocrine system, to include:

- The endocrine system's role in homeostasis
- How regulation is achieved

5.2 Identify the major glands in the endocrine system, to include the location and function of the following:

- Hypothalamus and pituitary gland
- thyroid gland
- parathyroid gland
- pancreas
- adrenal glands
- gonads – testes and ovaries

5.3 Explain the function of hormones, to include:

- **Growth hormones**
- **Thyroid hormones**
- **Corticosteroids**
- **Catecholamines**
- **Insulin**
- **Glucagon.**

The learner will:

6. Understand energy systems and their relation to exercise

NB: Tutor note: You may want to recap the three energy systems outlined in level 2 before covering the information below.

The learner can:

6.1 Identify the contribution of energy, according to:

- **Duration of exercise/activity being performed**
- **Type of exercise/activity being performed**
- **Intensity of exercise/activity being performed**

To include:

- The relative contribution of each energy system to total energy used at different intensity levels
- The concept of gradually increasing levels of lactate in the blood as intensity increases, covering the following terms:
    - Anaerobic threshold and the onset of blood lactate accumulation (OBLA)
    - Aerobic threshold
- How the capacity of the three energy systems can be improved, to include:
    - Different training modalities
    - An explanation of the mechanisms by which adaptations occur

6.2 Identify the by-products of the three energy systems and their significance in muscle fatigue, to include:

- Formation of lactic acid from pyruvic acid and hydrogen ions

6.3 Describe the effect of endurance training/advanced training methods on the use of fuel for exercise, to include:

- Continuous training
- Interval/fartlek training

Assessment specification

Anatomy and physiology for exercise and health

Assessment element 12 – theory paper

- Externally set multiple-choice theory paper.
- Questions will relate to the syllabus for 'Anatomy and physiology for exercise and health' unit (A/600/9051, Level 3).
- The time allocation for the theory paper is 60 minutes. The theory assessment will comprise 40 questions (1 mark per question) and the learners must achieve a minimum of 28 marks overall to pass (70%).
- Guidance relating to theory paper assessment can be found on the YMCA Awards website.

NB: Samples of theory papers questions are available on request.

Applying the principles of nutrition to a physical activity programme (L/600/9054)

Unit aim

This unit covers the application of the principles of nutrition to support client goals as part of an exercise and physical activity programme.

The learner will:

1. Understand the principles of nutrition

The learner can:

1.1 Describe the structure and function of the digestive system, to include:

- The two types of break down and their location within the digestive system:
    - Chemical
    - Mechanical
- The structure and function of each section of the alimentary canal:
    - Mouth
    - Oesophagus
    - Stomach
    - Duodenum
    - Small intestine
    - Large intestine
    - Colon
- The location and process of digestion of fats, carbohydrates and protein throughout the digestive system
- The role of dietary fibre in efficient digestion and elimination of waste from the body

1.2 Explain the meaning of key nutritional terms including:

- **diet**
- **healthy eating**
- **nutrition**
- **balanced diet**

1.3 Describe the function and metabolism of:

- **macro nutrients**
- **micro nutrients**

- Macronutrients, to include:
  - Carbohydrates (including fibre – non-starch polysaccharides (NSP))
    - The dietary role of carbohydrate
    - The structure of carbohydrate and explain the difference between complex carbohydrates (plant starches and fibres) and simple carbohydrates (sugars)
    - The terms glycaemic index (GI) and glycaemic load (GL) in relation to the effect a food has on blood sugar level
    - Examples of foods that can be categorised as high/medium/low GI and GL
    - The potential health consequences of a diet high in GI foods
    - Healthy eating guidelines with reference to the GI/GL of food
    - Factor that affect GI eg, cooking method

See www.glycemicindex.com

  - Fats, to include:
    - The structure of fats and identify the difference between saturated, unsaturated (mono and polyunsaturated) and trans fat
    - The role of dietary fat
    - The metabolism of dietary fats
    - The process of ketosis
    - How fats are transported around the body as plasma lipoproteins
    - The different functions of LDLs (low density lipoproteins) and HDLs (high density lipoproteins)
    - The role of cholesterol in the body, to include: cell membrane structure, steroid hormone synthesis and bile production
  - Protein, to include:
    - The dietary role of protein
    - The structure of protein
    - The term 'biological value' with reference to different protein sources
    - Why some amino acids (the primary amino acids) are essential to the body
    - The metabolism of protein
  - Water, to include:
    - The function of water in the diet
    - The different ways in which fluid is lost from the body
    - The effect of solute (sugar) and electrolyte (sodium) content on water absorption across the gut by osmosis
    - The diuretic effect of caffeine, sugar and alcohol
    - Current guidelines (Department of Health) for safe upper limits of alcohol per day
  - The health implications of dehydration, to include:
    - Decrease in blood volume (blood pressure) and therefore inadequate distribution of nutrients and oxygen around the body
    - Decreased blood flow to the brain therefore headache, poor concentration and compromised motor fitness
    - Decrease in kidney function because of water retention in the body (discuss this apparent paradox)
    - Decrease in metabolic rate in all cells with consequences for metabolic efficiency and weight management

        - Increased risk of poor digestive processes and constipation
- Micro nutrients, to include:
    - Vitamins
    - Minerals
        - Give a simple definition of a vitamin, mineral and an anti-oxidant
    - water soluble and fat soluble vitamins and discuss the difference, in terms of:
        - Function
        - Storage
        - Potential toxicity
        - Food sources for each
    - Macro and trace minerals, to include:
        - Sodium, calcium, iron, selenium and zinc
        - Food sources for each
    - The following antioxidant nutrients
        - Vitamin C
        - Vitamin A
        - Vitamin E
        - Selenium
        - Flavanoids
        - Carotenoids

1.4 Explain the main food groups and the nutrients they contribute to the diet, to include:

- The main food groups as outlined in the national food guide, to include:
    - Bread, rice, potatoes, pasta and other starchy foods
    - Fruit and vegetables
    - Milk and dairy foods
    - Meat, fish, eggs, beans and other non-animal sources of protein
    - Foods and drinks high in added fat and/or sugar
    - Food sources for macro and micro nutrients (as outlined in 1.3)

Tutor note: the food groups represented by a national food guide may vary, based on cultural and dietary habits within a population.

1.5 Identify the calorific value of nutrients, to include:

- Protein
- Fats
- Carbohydrates
- Alcohol

1.6 Explain the common terminology used in nutrition including:

- **UK dietary reference values (DRV)**
- **recommended daily allowance (RDA)**
- **recommended daily intake (RDI)**
- **glycaemic index***

NB: Centres should provide learners with the most up-to-date guidelines as and when they become available and where appropriate.

Scientific Advisory Committee on Nutrition (SACN), www.SACN.gov.uk Department of Health www.doh.gov.uk

*Glycaemic Index – see carbohydrates AC 1.3

1.7 Interpret food labelling information, to include:

- Referring to current EU food labelling legislation, outline the information which should be displayed on a food label.
- The relevance of the nutritional information given on a food label, to include:
    - Total kcal content
    - Percentage of kcals derived from fats, carbohydrates and proteins
    - Proportion of fats that are saturated/unsaturated and proportion of carbohydrates that are sugars/starches
    - Safe intakes
    - Guideline daily amounts
- The advantages and disadvantages of the above information in providing consumers with clear information and guidelines which will help them achieve a healthy, balanced diet
- The advantages and disadvantages of alternative methods of presenting nutritional information to the consumer such as 'traffic light system' and 'Guideline Daily Amounts'
- How to evaluate the information given on an ingredients list, to include:
    - The fact that ingredients are listed in descending order of weight
    - The use of inexpensive ingredients to give bulk to foods
    - Additives such as colourings, flavourings, artificial sweeteners and preservatives

Ref: Department of Health dh.gov.uk, Food Standards Agency food.gov.uk, Department for Environment and Rural Affairs defra.gov.uk, European Commission eu.europa.eu

1.8 Explain the significance of healthy food preparation, to include:

- Advice on cooking and food preparation methods that facilitate healthy eating, covering:
    - Steaming
    - Dry frying
    - Grilling
    - Baking
- Advice on healthy choices when eating out or ordering a takeaway meal including a variety of food options

1.9 Explain the relationship between nutrition, physical activity, body composition and health, including:

- **links to disease/disease risk factors**
- **cholesterol**
- **types of fat in the diet**

Covering:

- The physiological mechanism by which levels of adiposity (% body fat) are established and maintained in the human body, with reference to the role of the hormones leptin and ghrelin
- The causes of obesity and that they are multifactorial and methods for managing/dealing with obesity
- The relationship between body fat levels and the development of type 2 diabetes
- The possible relationship between dietary fat intake and circulating cholesterol levels
- The involvement of LDLs in the pathogenesis of atherosclerosis
- The protective effect of HDLs in relation to CHD risk
- The link between CHD risk and LDL:HDL ratios
- The importance of essential fatty acids (EFAs), their positive effects on health and how they may be obtained as part of a balanced diet
- Consumption of sugar and refined carbohydrates
- The health consequences of over and under consumption of fat, such as:
  - Obesity
  - CHD
  - Hormone imbalance
  - Fat soluble vitamin and essential fatty acid deficiency.

The learner will:

2. Understand key guidelines in relation to nutrition

The learner can:

2.1 Identify the range of professionals and professional bodies involved in the area of nutrition, to include:

- Nutritionists
- British Nutrition Foundation
- Dieticians
- British Dietetic Association
- Scientific Advisory Committee for Nutrition (SACN)
- Department of Health
- Nutrition Society
- European Food Information Council

2.2 Explain key healthy eating advice that underpins a healthy diet, to include:

- The dietary targets for fats, proteins and carbohydrates in relation to the provision of energy:
    - Fats = no more than 35% (not more than 11% saturated, 13% monounsaturated, 6.5% polyunsaturated)
    - Proteins = 10-15%
    - Carbohydrates = 50% (predominantly unrefined complex carbohydrates)

Reference: The dietary reference values for foods, energy and nutrients for the United Kingdom. A report on the panel on dietary reference values of the committee on medical aspects of food policy. HMSO, 1991

*Centres should provide up-to-date national guidelines and key messages with reference to SACN www.sacn.gov.uk and Department of Health www.doh.gov.uk

- How the above values are intended to provide guidance for individuals within a population rather than recommendations. It should be acknowledged that some individuals may require more or less of a given nutrient, for example:
    - Individuals who require higher or lower energy intakes e.g. Very active or very sedentary lifestyles
    - Pregnancy/lactation
    - The elderly
    - Fat loss

Tutor note: Emphasis should be placed on the fact that these groups may need more or less than the above dietary targets

2.3 Describe the nutritional principles and key features of the national food model/guide, to include:

- The different food groups and provide examples foods within each group (also see AC1.4)
- How the national food guide is intended to provide simple, healthy eating advice in a way consumers can understand
- The key messages in terms of 'quantity/proportion' and 'quality' as presented in the national food guide
- How the national food guide is a proportional representation of the food groups describes, and that individuals require food quantities in relation to their energy requirements and lifestyle

2.4 Define portion sizes in the context of the national food model/guide, to include:

- Portions sizes of fruit and vegetables

ref: www.dh.gov.uk/health/2012/06/about-the-eatwell-plate/

2.5 Explain how to access reliable sources of nutritional information, to include the following:

- Reports and updates from SACN
- British Nutrition Foundation
- British Dietetic Association
- Department of Health
- The Nutrition Society
- Academic journals eg, Journal of Human Nutrition and Dietetics and British Journal of Nutrition
- How to interpret available information

2.6 Distinguish between evidence-based knowledge versus the unsubstantiated marketing claims of suppliers

with reference to 2.5.

The learner will:

3. Understand nationally recommended practice in relation to providing nutritional advice

The learner can:

3.1 Explain professional role boundaries with regard to offering nutritional advice to clients, to include:

- That the level of information is in line with 'healthy eating guidelines'

3.2 Explain the importance of communicating health risks associated with weight loss fads and popular diets to clients, to include:

- The importance of the client making an educated and informed choice about a diet

3.3 Evaluate the potential health and performance implications of severe energy restriction, weight loss and weight gain, to include:

- The physiological consequences of very low kilo calorie (kcal) diets (ie, those that provide fewer kilo calories than the BMR), to include:
    - Decrease in metabolic rate
    - Decreased efficiency of fat mobilising and fat burning mechanisms
    - Loss of lean muscle tissue
    - Ketoacidosis
- The strengths and weaknesses of different dietary practices marketed to promote weight loss, to include:
    - Very low fat diets
    - High protein low carbohydrate diets
    - Food combining
    - Meal replacement diets
    - 'Fat burning' and 'weight loss' supplements
    - Elimination or limited food diets
    - 'Rapid' weight loss methods
- Safe and effective strategies for weight management with a rationale for their effectiveness, to include:
    - The importance of the energy balance equation
    - The strengths of diet alone and joint diet and exercise strategies as appropriate interventions to meet differing needs such as weight loss/gain and changes in body composition

3.4 Identify clients at risk of nutritional deficiencies, including:

- Restricting overall energy intake
- Low fat, carbohydrate or protein diets
- Very high energy demands

3.5 Explain how cultural and religious dietary practices can influence nutritional advice, to include:

- The environmental, social and psychological factors that may influence dietary intake behaviours:
    - Social and cultural norms particularly with respect to body image
    - The influence of the media in establishing concepts of normality
    - The effect of increased availability of different foods and food outlets on patterns of consumption
    - The impact of changes in family and working practices on nutritional behaviour
    - How religious practices may affect nutritional intake

3.6 Describe safety, effectiveness and contraindications relating to protein and vitamin supplementation, to include:

- The role of a nutritionist/dietician to evaluate the need for nutritional supplementation
- The various extremes of opinion surrounding supplementation
- The contraindications for supplementation

3.7 Explain why detailed or complex dietary analysis that incorporates major dietary change should always be referred to a registered dietician, to include:

- The scope of practice of an instructor/personal trainer
- The scope of practice of a registered dietician

The learner will:

4. Understand the relationship between nutrition and physical activity

The learner can:

4.1 Define the role of carbohydrates, fat and protein as fuels for aerobic and anaerobic energy production, to include:

- The contribution of different fuels in ATP production at different exercise intensities, to include:
    - Carbohydrates
    - Fat
    - Protein
    - Creatine phosphate
- The specific storage capacity and role of both muscle and liver glycogen and identify factors which can contribute to an individual's capacity to store glycogen
- The process of gluconeogenesis with reference to muscle glycogen depletion during exercise

4.2 Explain the components of energy expenditure and the energy balance equation, to include:

- Body composition
- BMR
- Exercise/activity
- Lifestyle
- Energy in > energy out = weight gain, energy in < energy out = weight loss, energy in = energy out = weight maintenance

4.3 Explain how to calculate an estimate of basal metabolic rate (BMR), to include:

- The factors that contribute to an individual's energy requirement, to include:
    - BMR
    - Activity levels - exercise and activities of daily living (ADL's)
    - Age
    - Gender
    - Thermic effect of food (TEF)

4.4 Explain how to estimate energy requirements based on physical activity factors and other relevant factors, to include:

- The Schofield calculation

4.5 Identify energy expenditure for different physical activities

Tutor note: please see the Nutrition for Physical Activity manual, 'Effective weight loss strategies' chapter for further guidance.

4.6 Evaluate the nutritional requirements and hydration needs of clients engaged in physical activity, to include:

- The benefits of nutritional strategies to maximise muscle glycogen stores, to include:
    - Fuelling pre, during and post exercise
    - Carbohydrate loading
    - Sports drinks and supplements
- The relationship between an individual's activity levels, energy expenditure and nutrient intake
- Why some physically active individuals may require higher protein intakes:
    - Sedentary adult – 0.8g/kg body weight
    - Endurance athlete – 1.2-1.4g/kg body weight
    - Strength/power athlete – 1.4-1.8g/kg body weight
- Why some physically active individuals may require higher intakes of carbohydrate compared to those who lead a sedentary lifestyle
- How hydration requirements are directly related to energy expenditure
- Evaluating the value of hypertonic, hypotonic and isotonic sports drink for hydration and provision of energy
- Nutrition and exercise guidelines for safe and effective muscle gain, to include:
    - Achievable muscle gain
    - Nutritional requirements for optimal gains.

The learner will:

5. Understand how to collect information relating to nutrition

The learner can:

5.1 Explain why it is important to obtain client's informed consent before collecting nutritional information, to include:

- Informing the client of what information you wish to collect and how it will be used before they agree to provide you with the information

5.2 Describe the information that needs to be collected to offer nutritional advice to clients, to include:

- Age
- Weight
- Gender
- Occupation
- Lifestyle
- Current dietary intake and history
- Exercise/activity levels – current and history
- Likes and dislikes – diet and activity
- Goals and motivation
- Relevant medical conditions/health status

5.3 Explain the legal and ethical implications of collecting nutritional information, with reference to:

- Data protection act
- REPs code of ethical conduct

5.4 Describe different formats for recording nutritional information, to include:

- Food diary
- Discussion (recall)

5.5 Explain why confidentiality is important when collecting nutritional information, to include:

- The nature of the information

5.6 Describe issues that may be sensitive when collecting nutritional information, to include:

- Previous/current health problem
- Previous/current dietary habits/beliefs

5.7 Explain different methods that can be used to measure body composition and health risk in relation to weight, to include:

- Weighing scales
- Bioelectrical impedance
- Body mass index (BMI)
- Anthropometric measurements
- Discuss the advantages and disadvantages of the methods above

The learner will:

6. Understand how to use nutritional information

The learner can:

6.1 Describe basic dietary assessment methods

with reference to AC 5.4.

6.2 Explain how to analyse and interpret collected information so that clients' needs and nutritional goals can be identified with reference to the national food model/guide recommendations

6.3 Describe how to interpret information gained from methods used to assess body composition and health risk in relation to weight.

with reference to AC 5.7

6.4 Explain how to sensitively divulge collected information and 'results' to clients, to include:

- The need for privacy
- Communication style
- The ability to show empathy
- how to recognise the signs and symptoms of disordered eating and healthy eating patterns, to include:
- Disordered eating behaviours:
    - Anorexia nervosa
    - Bulimia nervosa
- Healthy eating behaviour

6.6 Describe the key features of the industry guidance note on 'managing users with suspected eating disorders', to include:

- Appropriate avenues for referral and sources of reliable information relating to eating disorders eg, Eating Disorder Association

Tutor note: refer to ISRM information note at ymcaawards.co.uk/files/isrm-information-note.pdf

6.7 Explain the circumstances in which a client should be recommended to visit their GP about the possibility of referral to a registered dietician, to include:

- If they have a condition or suspect they have a condition-which may be affected by their diet
- Their needs require more complex analysis than healthy eating guidelines for physical activity.

The learner will:

7. Understand the principles of nutritional goal setting with clients

The learner can:

7.1 Explain how to apply the principles of goal setting when offering nutritional advice, to include:

- The ability to negotiate SMART (specific, measurable, achievable, realistic, time-framed) goals over short, medium and long-term periods in order to assist the client achieve their goals

7.2 Explain how to translate nutritional goals into basic healthy eating advice that reflects current national guidelines, to include:

- The need for a high level of understanding of healthy eating guidelines and strategies to maintain motivation throughout the change process and develop and establish positive behaviour patterns
- The ability to monitor and evaluate progress and the ability to meet changing needs and circumstances in response to life events such as illness, injury, changing employment patterns, holidays and lack of motivation

Tutor note: this point should address the need for the learner to be able to renegotiate goals ie, taking a break from the programme rather that deal directly with injury and illness which should be referred to a qualified practitioner.

7.3 Explain when people other than the client should be involved in nutritional goal setting, to include:

- If the client has a carer
- If the client has a dietician due to a specific condition

7.4 Define which other people could be involved in nutritional goal setting, to include:

- Other family members
- Partners
- Other practitioners

7.5 Identify the barriers which may prevent clients from achieving their nutritional goals

Tutor note: barriers will be specific to the client however you can discuss general barriers such as food preparation time, food likes and dislikes. For more information see the 'Nutrition for Physical Activity' manual, 'Client consultation' chapter.

7.6 Explain how to apply basic motivational strategies to encourage healthy eating and prevent non-compliance or relapse, to include:

- The different stages of change in relation to nutritional behaviour and describe what strategies may be employed at each stage

7.7 Explain the need for reappraisal of clients' body composition and other relevant health parameters at agreed stages of the programme

The learner will:

8. Be able to collect and analyse nutritional information

See LO4, 5, 6 and 7 above for underpinning knowledge

The learner can:

8.1 Collect information needed to provide clients with appropriate healthy eating advice

8.2 Record information about clients and their nutritional goals in an approved format

8.3 Analyse collected information including nutritional needs and preferences in relation to the client's current status and nutritional goals

The learner will:

9. Be able to apply the principles of nutrition to a physical activity programme

See LO4, 5, 6 and 7 above for underpinning knowledge

The learner can:

9.1 Access and make use of credible sources of educational information and advice in establishing nutritional goals with clients

9.2 Design and agree nutritional goals that are compatible with the analysis, accepted good practice and national guidelines

9.3 Ensure that the nutritional goals support and integrate with other programme components

9.4 Agree review points with the clients

9.5 Review the clients understanding of how to follow the nutritional advice as part of their physical activity programme

9.6 Monitor, evaluate and review the client's progress towards their nutritional goals

Assessment specification

Applying the principles of nutrition to a physical activity programme

Assessment element 13 – theory paper

- Externally set multiple-choice theory paper.
- Question will relate to the syllabus for 'Applying the principles of nutrition to a physical activity programme' learning outcomes 1 to 4, unit (L/600/9054, Level 3).
- The time allocated for the theory paper is 45 minutes. The theory assessment will comprise 30 questions (1 mark per question), and learners must achieve a minimum of 21 marks overall to pass (70%).
- Guidance relating to theory paper assessment can be found on the YMCA Awards website.

Note: a calculator may be used for this assessment.

Assessment element 14 – knowledge questions and case study

Knowledge questions

Learners are required to complete fully the knowledge questions, externally set by YMCA Awards.

Learners must provide evidence that they possess all the necessary knowledge, understanding and skills to satisfy the requirements of learning outcomes 5 to 7 of this unit; if they fail to provide sufficient evidence through completion of the knowledge questions, supplementary questions will need to be asked by the assessor in order to confirm competence.

All supplementary questions and answers must be recorded.

Case study

Learners are required to complete fully the case study template. The case study is externally set by YMCA Awards.

The case study should be carried out on an apparently healthy adult who does not require nutritional intervention from a doctor/dietician or nutritionist eg, diabetic, Crohn's disease, eating disorder.

The client can be selected from a number of sources:

- another learner/peer
- friend or relative
- partner or spouse

Learners must provide evidence that they possess all the necessary knowledge, understanding and skills to satisfy the requirements of learning outcomes 8 and 9 of this unit; if they fail to provide sufficient evidence through completion of the case study, supplementary questions will need to be asked by the assessor in order to confirm competence. All supplementary questions and answers must be recorded.

The case study should be marked by an assessor using the case study checklist.

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