YMCA Level 3 Diploma in Supporting Participation in Physical Activity: Long-Term Health Conditions (610/4680/2)

Operational start date: 01/10/2024

Qualification Specification

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Qualification Specification

Contents

Introduction

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

We are experts in education, health and well-being with over 20 years of experience developing UK regulated and globally recognised qualifications.

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

Aim

By completing this qualification, learners will meet industry requirements to plan, adapt and deliver exercise and physical activity sessions and programmes (within scope of practice) to meet the needs of adults with long-term health conditions.

Long-term health conditions that are covered by this qualification are outlined within Appendix 3: Conditions within scope of practice for this qualification

Progression opportunities

This qualification is a population specialism. This means it is designed to support existing exercise and fitness instructors to expand their scope of practice to work with adults with long-term health conditions.

This qualification can also lead to further training at other levels to specialise and further increase scope of practice. For example:

- **Occupational specialism** (to work in additional job roles):
  - YMCA Level 2 Diploma in Exercise and Fitness: Gym Instructor (610/2784/4)
  - YMCA Level 3 Diploma in Exercise and Fitness: Personal Trainer (610/2787/X)
  - YMCA Level 2 Award in Exercise and Fitness: Group Exercise Instructor (610/2792/3)
- **Population specialisms** (to work with a broader range of clients):
  - YMCA Level 2 Award in Engaging Inactive People in Physical Activity to Create Long-Term Behaviour Change (603/7345/3)
  - YMCA Level 2 Award in Engaging Children Aged 0-5 in Sport and Physical Activity (603/7218/7)
  - YMCA Level 2 Award in Engaging Children and Young People in Sport and Physical Activity (603/7216/3)
  - YMCA Level 3 Award in Supporting Participation in Physical Activity: Perinatal (610/0829/1)
  - YMCA Level 3 Award in Supporting Participation in Physical Activity: Disability and Impairments (610/1559/1)
  - YMCA Level 3 Award in Supporting Participation in Physical Activity: Older Adults (610/1668/8)
- **Environment specialisms** (to work in more settings):
  - YMCA Level 2 Award in Developing Sustainable Physical Activity Programmes Within Community Settings (603/7343/X)
- **Lifestyle specialisms** (to support work with a broader range of needs):
  - YMCA Level 2 Award in Supporting Wellness (610/4039/3)
  - YMCA Level 3 Certificate in Supporting Wellness through Lifestyle Behaviour Change (610/4040/X)
- **Technical specialisms** (to work with specific equipment or perform additional roles within the workplace):
  - YMCA Level 2 Award in Mental Health Awareness and Understanding Approaches to Support Individuals (603/7146/8)
  - YMCA Level 3 Award in Emergency First Aid at Work (603/1902/1)

- YMCA Level 3 Award in First Aid at Work (603/1903/3)
- YMCA Level 4 Certificate in Advanced Nutrition for Health, Weight Management and Sports Performance (610/2694/3)

Stakeholder engagement

This qualification is mapped and endorsed against standards and duties outlined by the organisations listed below:

- Chartered Institute for the Management of Sport and Physical Activity (CIMSPA)

Qualification	Standard(s)
YMCA Level 3 Diploma in Supporting Participation in Physical Activity: Long-Term Health Conditions (Practitioner) (610/4680/2)	Partially maps to v1.0 of the CIMSPA Working with People with Long Term Conditions professional standard.

Entry requirements and prerequisites

This qualification has been designed for learners who:

- are 16+ years old
- hold an appropriate sport/exercise or fitness occupation entry qualification mapped to a CIMSPA professional standard:
  - gym instructor
  - core group exercise instructor
  - personal trainer
  - Pilates matwork instructor
  - strength and conditioning (trainer)
- are able to communicate effectively with individuals and groups.

In order to have developed teaching skills and confidence, it is recommended that learners have at least six months' experience planning and delivering exercise sessions before taking this qualification.

Availability

Learners can take this qualification in:

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

Reasonable adjustments and special consideration

In making these qualifications available, YMCA Awards has made every attempt to make sure that there are no unnecessary barriers to achievement. You can find full details of our reasonable adjustment and special consideration policy on our website.

ymcaawards.co.uk/centres/policies-and-procedures

Grading and structure

This qualification is graded Pass or Refer.

A Pass grade demonstrates that a learner has been assessed as fully competent against all assessment criteria within the qualification.

A Refer indicates that a learner has been assessed as not yet competent against one or more of the assessment criteria of the unit and/or qualification. This is a failing grade, and learners will require reassessment to achieve the qualification.

To achieve a pass, learners must complete the following **three** mandatory units:

UN	Unit title	Level	GLH	TQT
A/651/3010	Anatomy and physiology: Long-term health conditions	3	78	125
H/651/1818	The role of physical activity and exercise in the prevention and management of long-term health conditions	3	120	155
J/651/1819	Programming, adapting and delivering exercise for adults with long-term health conditions	3	100	160

Please note: Recognition of prior learning (RPL) can be applied for learners who hold the Level 3 Anatomy and physiology for exercise and fitness professionals or who have completed an equivalent anatomy and physiology unit within the last three years.

Guided learning hours (GLH): 298

Total qualification time (TQT): 440

Find out more about GLH and TQT on our website:

ymcaawards.co.uk/qualifications/glh-and-tqt

Using this document

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

Learning outcome ('The learner will')	
Assessment criteria ('The learner can') What a learner is expected to know, understand or be able to do following their learning.	**Relevant content** (Additional delivery guidance) Suggestions on depth and breadth of content to cover.

At the end of each unit, the assessment specification outlines how we expect to measure or confirm the learner has met the standard set in the learning outcomes and assessment criteria.

Assessment overview

This qualification is designed to be assessed in line with the learner journey, with learners demonstrating the knowledge, skill and behaviours outlined in one stage before proceeding to the next.

The table below provides details of the tasks within each assessment stage.

Assessment stage and task	Details	Unit(s) assessed

1.1 Questions and answers on anatomy and physiology	Learners to need to answer questions designed to assess their knowledge of:
	• Anatomical terminology
	• Classification, structure, and function of the anatomical and physiological systems of the body.
	  ○ The skeletal system
	  ○ The muscular system
	  ○ The cardiovascular system
	  ○ The respiratory system
	  ○ The nervous system
	  ○ The endocrine system
	  ○ The energy systems
	• Interrelationship between the anatomical and physiological systems.
	• Lifespan changes which affect the body system, health, and wellbeing
	• The effects of exercise and physical activity on the body systems.
	"This assessment is available digitally (auto-marked) through YMCA Awards' online system. Centres wishing to create their own questions or use their own platform must seek prior approval from YMCA Awards."
		Anatomy and physiology: Long-term health conditions (A/651/3010)

Assessment stage and task	Details	Unit(s) assessed
	This task will be authenticated, and knowledge and understanding confirmed by assessment tasks in assessment stage 2.	
2.1 Long-term health conditions worksheet and professional discussion	There are two parts to this assessment: 1. Long-term health conditions worksheet. 2. Professional discussion. **1. Long-term health conditions worksheet.** The assessor will allocate a set of seven long-term health conditions. One from each of the following seven categories: 1. Hypertension **OR** hypercholesterolemia **OR** hyperlipidaemia 2. Coronary heart disease (post phase IV rehabilitation) **OR** peripheral vascular disease **OR** hypothyroidism **OR** hyperthyroidism 3. Asthma **OR** chronic obstructive pulmonary disease (COPD) 4. Obesity **OR** type 1 diabetes **OR** type 2 diabetes 5. Non-specific low back pain **OR** osteoporosis 6. Depression **OR** stress **OR** general anxiety disorder 7. Rheumatoid arthritis **OR** osteoarthritis **OR** joint replacement Learners are required to complete the long-term health conditions worksheets for the seven conditions using class notes and independent research from evidence-based, reputable sources. The completed worksheet template must be submitted to the assessor to mark in preparation for the professional discussion. The assessor will provide feedback within two weeks.	The role of physical activity and exercise in the prevention and management of long-term health conditions (H/651/1818)

Assessment stage and task	Details	Unit(s) assessed

	2. Professional discussion
	
	Learners will undertake a 10 minute ±10% professional discussion with their assessor. The aim of the professional discussion is to authenticate the learner's work and confirm their knowledge and understanding relating to the health conditions they were issued.
	
	The professional discussion will consist of one broad open-ended question and up to three additional open-ended questions covering the topics listed below:
	
	• The role of physical activity and exercise in the prevention and management of long-term health conditions
	  ○ the wider determinants of health, their impact on health inequalities and on an individual's health
	  ○ how specific long-term health conditions (including medical management) may affect participation in exercise and quality of life (giving reference to the short- and long-term effects of exercise on the body systems)
	  ○ guidelines and recommendations for physical activity and exercise for adults with long-term health conditions
	
	Learners may refer to their long-term health conditions worksheet template during the professional discussion. No other notes are permitted.
	
	Further information on assessment is available in the Learner Assessment Record	

Assessment stage and task	Details	Unit(s) assessed
2.2 Applied case study worksheets, professional discussion and observed practical task	There are three parts to this assessment: 1. Applied case study questions. 2. Professional discussion. 3. Plan, deliver and evaluate. Learners are provided with the following scenario: "You have just started to advertise that you are currently training to deliver exercise for clients with long-term health conditions. A range of individuals (see case study briefs) have contacted you asking for information." The assessor will select and allocate one set of three case studies (either Set 1, Set 2, Set 3 or Set 4,) for the learner to review. **1. Applied case study questions** Learners are required to complete the applied case study question template, to: • Summarise the information that may affect each case study's overall health status, risk stratification (low, medium, high) and readiness to participate in exercise or reasons for exclusion. • Explain any specific health conditions, contraindications or needs that may exceed scope of practice and the action they would take. Once completed, the applied case study question template must be submitted to the assessor to mark in preparation for the professional discussion. The assessor will provide feedback within two weeks. **2. Professional discussion** Learners will undertake a 10 minute (±10%) professional discussion with their assessor. The aim of the professional discussion is to authenticate the learner's	The role of physical activity and exercise in the prevention and management of long-term health conditions (H/651/1818)

Assessment stage and task	Details	Unit(s) assessed

	work and confirm their knowledge and understanding relating to the case studies they were issued.
	
	The professional discussion will consist of one broad open-ended question and up to three additional open-ended questions covering the topics listed below:
	
	• LO3: Understand the risks and contraindications to exercise for adults with long-term health conditions.
	  ○ considerations for managing risks for individuals with comorbidities and multiple morbidities
	  ○ different risk stratification models used to assess risk of participation
	• LO4: Understand guidelines for best practice when delivering physical activity and exercise for adults with long-term health conditions.
	  ○ the role of exercise referral schemes in supporting adults with long-term health conditions
	
	Learners may refer to their applied case study template during the professional discussion. No other notes are permitted.
	
	3. Plan, deliver and evaluate
	
	On completion of the professional discussion, the assessor will allocate **ONE** of the case studies and the learner will be required to plan, deliver and evaluate a session to meet their needs.
	
	Learners must complete the following records:
	
	• a session overview
	• a risk assessment
	• session plan:	

Assessment stage and task	Details	Unit(s) assessed
	○ a suitable warm-up, including: – mobility (joint actions) – pulse raising activities/exercises – range of motion stretching ○ main component, including – cardiovascular training – muscular fitness training ○ a suitable cooldown and flexibility component • programme of changes over a three-month period. The exercise genre planned and delivered e.g. gym, group exercise to music or yoga, must be within scope of practice (appropriate qualifications held). All exercises selected are the learners' choice and should provide a balanced whole body training approach covering all components of fitness. Yoga and Pilates professionals completing this qualification must explain how they will advise and support individuals to train other components of fitness. The session must be delivered live and in real time and be observed by a qualified assessor. The use of pre-recorded video assessment is not permitted. The practical delivery (and planning and evaluation) may be observed as a full session or continuous and observed in stages by the assessor (so the various class components – warm-up, main component and cooldown and stretching) can be completed at different times and over time). Peers can be used for this assessment.	

Assessment stage and task	Details	Unit(s) assessed
	On completion of each delivery, the assessor will ask learners to complete the self-evaluation record. They will be given 30 minutes in total to complete this task (10 minutes for each session component if delivery is continuous). Further information on assessment is available in the Learner Assessment Record.	

Assessment stage and task	Details	Unit(s) assessed
3.1 Bespoke client work project **1.** Consultation and assessment **2.** Planning and programming **3.** Implementation and evaluation **4.** Showcase presentation 5. Professional discussion	There are five parts to this assessment: **1.** Consultation and assessment **2.** Planning and programming **3.** Implementation and evaluation **4.** Showcase presentation 5. Professional discussion **1. Consultation and assessment** Learners are required to complete a consultation and assessment with a client who has: • two chronic health conditions **OR** • one chronic health condition and inactive (not meeting current activity guidelines) or at higher risk of developing chronic health conditions and other lifestyle factors. The client needs must be within scope of practice. The consultation and assessment should last between 45 and 60 minutes. Learners should capture notes during the consultation/assessment in the supplied consultation and assessment record and then write up in full sentences immediately afterwards, where required. **2. Planning and programming** Learners are required to use the information gathered during the consultation to plan a full session plan for the first session with the client and an outline of anticipated changes to the programme over a three-month period.	Programming, adapting and delivering exercise for adults with long-term health conditions (J/651/1819)

Assessment stage and task	Details	Unit(s) assessed

	Learners must complete the following records:
	• a session overview, including PAR-Q+ and informed consent
	• a risk assessment
	• session plan:
	  ○ a suitable warm-up, including:
	  – mobility (joint actions)
	  – pulse raising activities/exercises
	  – range of motion stretching
	  ○ main component, including
	  – cardiovascular training
	  – muscular fitness training
	  ○ a suitable cooldown and flexibility component
	• programme of changes over a three-month period.
	All exercises selected are the learners' choice and should provide a balanced whole body training approach covering all components of fitness.
	Yoga and Pilates professionals completing this qualification must explain how they will advise and support individuals to train other components of fitness.
	The consultation and programming records must be submitted to the assessor to check in preparation for implementing the programme. The assessor will provide feedback within two weeks.	

Assessment stage and task	Details	Unit(s) assessed

	3. Programme implementation and evaluation
	
	Learners are required to implement the programme and deliver five sessions with their client or participants. These sessions should be recorded using the programme implementation log.
	
	Learners are required to outline:
	
	• session dates
	• client feedback
	• reviews of client progress – what changes and improvements.
	
	4. Showcase presentation
	
	The showcase presentation can only take place once the learner has implemented their programme for the required five sessions.
	
	On completion of the programme implementation, learners are required to record a presentation to showcase their work.
	
	The recorded presentation must be 10 minutes (±10%) and include:
	
	1. Review and evaluation of the learning and assessment journey, including:
	
	• the consultation and assessment process and details of the client:
	  ○ background (health needs and activity levels)
	  ○ goals/aims/motivational factors/barriers
	• programme planning and implementation and how they supported the client towards the achievement of their goals:
	  ○ description of the programme (content, frequency, and how its effectiveness was monitored)	

Assessment stage and task	Details	Unit(s) assessed
	○ reviews, feedback, any modifications made to the programme • strategies used to influence both short- and long-term behaviour change • evaluation (What worked well? What challenges they faced? What they would do differently with future clients?) 2. Plans for future work with clients with long-term health conditions. The showcase presentation recording must be submitted to the assessor to mark in preparation for the professional discussion. The assessor will provide feedback within two weeks. **3. Professional discussion** Learners will undertake a 10 minute (±10%) professional discussion with their assessor. The aim of the professional discussion is to authenticate the learner's work and confirm their knowledge and understanding relating to programming, adapting and delivering exercise to clients with long-term health conditions. The professional discussion will consist of one broad open-ended question and up to three additional open-ended questions covering the topics listed below: • how to screen and assess adults with long-term health conditions prior to participation in physical activity and exercise • how to plan and adapt exercise for adults with long-term health conditions • how to deliver and review exercise for adults with long term health conditions. The bespoke client work project will be centre assessed by an assessor using the checklist provided by YMCA Awards. Further information on assessment is available in the Learner Assessment Record.	

Qualification content

Anatomy and physiology: Long-term health conditions (A/651/3010)

Unit aim

To provide the essential knowledge of the structure and function of the body system relevant to exercise and fitness professionals.

Learners will be able to apply their knowledge of the changes to body systems, through life and the effects of exercise, to support clients.

Content

1. Understand anatomical terminology	
1.1 Identify terms of location.	Definition of terms and anatomical examples of: • superior and inferior • anterior and posterior • medial and lateral • proximal and distal • superficial and deep.

1.2 Identify planes of movement.	• Three planes which divide the body.
	• Joint actions and exercise examples in each plane:
	  ○ Frontal (coronal) plane:
	  – Passes from side to side at right angles to the sagittal plane.
	  – Divides the body into front and back sections.
	  – Related terminology – anterior and posterior.
	  – Joint actions include abduction and adduction.
	  – Exercise examples include side leg lifts (abduction), lateral raises, jumping jacks.
	  ○ Sagittal vertical plane:
	  – Passes from front to rear dividing the body into two symmetrical halves, left and right.
	  – Joint actions include flexion and extension.

	– Exercise examples include knee raises, leg curls, walking, running, forward lunge, biceps curl and bench press. ○ Transverse: – Any horizontal plane of the body that is parallel to the diaphragm. – Divides the body upper and lower. – Joint actions include rotation, pronation, and supination. – Exercise examples – spine rotations, oblique curls/crunches, twisting movement such as boxing jabs.

2. Understand the classification, structure, and function of the skeletal system	
2.1 Summarise the classification (types) of bones.	• Function and examples of each type of bone: • Bones classified by their shape and function ○ long – femur ○ short – tarsals ○ flat – scapula ○ sesamoid – patella ○ irregular – vertebrae
2.2 Outline the structure of bones.	Different types of bone tissue: • Compact and spongy/cancellous tissue • Long bone structure ○ articular cartilage at ends of bones (where joints are formed) ○ epiphysis ○ diaphysis ○ periosteum ○ epiphyseal plates (growth plates) ○ medullary cavity ○ hyaline cartilage ○ compact bone ○ cancellous bone ○ yellow and red bone marrow.

2.3 Name and locate major bones:
• axial
• appendicular
	• Axial:
	  ○ cranium, cervical vertebrae, thoracic vertebrae, lumbar vertebrae, sacral vertebrae, coccyx, sternum, ribs
	• Appendicular
	  ○ scapula, clavicle, humerus, ulna, radius, carpals, metacarpals, phalanges, ilium, ischium, pubis, femur, patella, tibia, fibula, tarsals, metatarsals.

2.4 Outline the structure and function of the spine.	Structure of the vertebral column: • Regions - cervical, thoracic, lumbar, sacral and coccygeal. • The number of vertebrae in each spinal section. • Four natural curves (two kyphotic, two lordotic). • Function of curves. • The roles that lordotic and kyphotic curves play in posture and achieving a 'neutral spine'. • Potential ranges of movement in different spinal regions, including joint actions.

2.5 Outline abnormal degrees of curvature of the spine and their implications for exercise.	• Curvatures that deviate from optional posture/alignment and their implications on movement:
	  ○ scoliosis
	  ○ hyper lordosis
	  ○ hyper kyphosis
	  ○ flat back
	  ○ sway back.
	• Factors that may contribute to sub-optimal spinal curvatures:
	  ○ muscle imbalances
	  ○ genetic conditions
	  ○ lifestyle factors
	  ○ medical conditions
	  ○ pregnancy.

2.6 Describe the functions of the skeleton.	Functions and examples: • Muscle attachments and levers – muscles attach to bones (levers) and exert a force to pull on the bones to create movement at joints (fulcrum). ○ With consideration to different types of leverage systems in the body and examples (1st class – head and neck, 2nd class – ankle and 3rd class – knee etc.). • Protection of internal organs, e.g. brain is protected by cranium, heart and lungs are protected by the rib cage.

	• Production of red and white blood cells in the bone marrow. • Skeletal framework provides body shape and a foundation structure. • Storage of calcium and other minerals.

2.7 Summarise the stages of bone development, growth, and repair.	• Process of bone growth – ossification
	• Stages of bone growth – from foetal, birth, through to adolescence and older age
	• Remodelling process
	  ○ roles of osteoblasts and osteoclasts and osteocytes
	  ○ role of calcium, vitamin d and hormones
	• Ageing /lifespan process – when bones stop growing in length, when bones lose calcium, including the effects of menstrual cycle and menopause, osteopenia/osteoporosis
	• Factors that affect growth:
	  ○ exercise – weight bearing
	  ○ age
	  ○ lifestyle factors – smoking, nutrition, alcohol etc
	  ○ sunlight
	  ○ hereditary factors.

2.8 Summarise the classification of joints.	Examples of different classifications and differences in function and movement potential: • fibrous – immoveable • cartilaginous – slightly moveable • synovial – freely moveable.
2.9 Outline the structure of freely movable joints: • types • ligaments	• Structure of a synovial joint – joint capsule, synovial membrane, synovial fluid, ligaments, tendons, and cartilage (hyaline and fibrocartilage). • Types – hinge, saddle, gliding, pivot, condyloid, ball and socket. • Structural differences of different types of joint and how this affects movement potential. • Function of ligaments: non-elastic, prevent/limit unwanted movement, attach bone to bone, joint stability. • Function of tendons. • Function of cartilage.

2.10 Describe the function of joints:
• joint actions at specific joints
• related planes of movement
• mobility
• stability.
	• The movement potential at different types of synovial joint (see types within 2.9.).
	• Joint actions available at specific joints:
	  ○ flexion and extension, e.g. knee
	  ○ adduction and abduction, e.g. hip
	  ○ rotation, e.g. between axis and atlas
	  ○ circumduction, e.g. shoulder
	  ○ horizontal flexion and horizontal extension, e.g. shoulder
	  ○ elevation and depression, e.g. shoulder girdle
	  ○ lateral flexion and lateral extension, e.g. spine
	  ○ pronation and supination, e.g. forearm – radioulnar joint
	  ○ plantar flexion and dorsi flexion, e.g. ankle
	  ○ protraction and retraction, e.g. shoulder girdle.
	  ○ inversion and eversion
	• Movement planes in which different joint actions happen:
	  ○ frontal (coronal), sagittal and transverse planes.
	• Factors affecting joint mobility and stability:
	  ○ structure – see different types of joint
	  ○ location – e.g. hip and shoulder different functions
	  ○ flexibility of surrounding tissues (laxity of ligaments)
	  ○ injury (damage to articular surfaces).

3. Understand the classification, structure, and function of the muscular system	

3.1 Summarise the types and properties of muscle tissue.	Different types of tissue, properties, and examples:
	• Skeletal – striated:
	  ○ voluntary - conscious control, controlled by somatic nervous system, found in consciously controlled skeletal muscles.
	• Smooth:
	  ○ involuntary – unconscious control, controlled by autonomic nervous system, found in structures not under conscious control, e.g. blood vessels, digestive system.
	• Cardiac – heart:
	  ○ involuntary – striated, unconscious control, initiated by the sinoatrial node (SA node).

3.2 Summarise the structure of skeletal muscles.	• Structure:
	  ○ muscle comprises (or consists of, made up from) water (70%), protein (23%), minerals and substrates (7%):
	  ▪ fascia
	  ▪ connective tissue
	  ▪ muscle fibres
	  ▪ fasciculi
	  ▪ epimysium
	  ▪ endomysium
	  ▪ perimysium
	  ▪ myofibrils
	  ▪ myofilaments
	  ▪ sarcomeres
	  ▪ actin and myosin
	  ▪ mitochondria (cells) and their role.
	  ○ muscle attachments (and examples):
	  ▪ aponeurosis
	  ▪ direct to bone
	  ▪ muscles cross joints, attach to bones via tendons
	  ▪ origins and insertions.

3.3 Describe skeletal muscle fibre types and their characteristics.	• Different types of muscle fibres and characteristics:
	  ○ Slow twitch type I - slow oxidative
	  ○ Fast twitch type 2a (intermediate) – fast oxidative glycolytic
	  ○ Fast twitch type 2b – fast glycolytic.
	• Relationships with:
	  ○ energy systems – aerobic and anaerobic
	  ○ different types of training.
	  ○ Factors that influence fibre type.
	  ▪ genetics
	  ▪ ageing
	  ▪ types of exercise

3.4 Name and locate the major skeletal muscles:
• upper, lower, anterior, posterior
• global and local postural stabilisers.
	• Location:
	  ○ local/global
	  ○ superficial /deep.
	• Location of:
	  ○ rotator cuff:
	  ▪ SITS (S: supraspinatus I: infraspinatus T: teres minor S: subscapularis)
	  ○ shoulder girdle:
	  ▪ levator scapulae, pectoralis major, pectoralis minor, serratus anterior, trapezius, rhomboids major/minor, teres major.
	  ○ arms and shoulders:
	  ▪ biceps, triceps, deltoids.
	  ○ back:
	  ▪ latissimus dorsi
	  ▪ spinal extensors: erector spinae, iliocostalis, longissimus, spinalis, multifidus, quadratus lumborum.
	  ○ pelvic girdle and hip:
	  ▪ flexors (iliopsoas): iliacus, psoas major
	  ▪ extensors: gluteals, gluteus maximus and hamstrings group
	  ▪ adductors: magnus, brevis, longus, pectineus, gracilis, sartorius
	  ▪ abductors: gluteus medius, gluteus minimus, piriformis, tensor fascia latae.
	  ○ legs:
	  ▪ quadriceps: rectus femoris, vastus medialis, vastus intermedius, vastus lateralis
	  ▪ hamstrings: Biceps femoris, semimembranosus, semitendinosus
	  ▪ tibialis anterior, gastrocnemius, soleus.
	  ○ abdominals:
	  ▪ internal and external obliques, transversus abdominus, rectus abdominis
	  ○ respiratory muscles:
	  ▪ intercostals and diaphragm.

	▪ accessory muscles – forced inspiration (sternocleidomastoid, pectoralis minor and major, serratus anterior, scalenes and latissimus dorsi) and forced expiration (all abdominal group) ○ 'core' and pelvic floor muscles.
3.5 Outline the joint actions produced by major skeletal muscles: • upper, lower, anterior, posterior • global and local postural stabilisers.	• Related function and joint action produced by concentric and eccentric contraction of specific muscles. • See 2.10 and 3.4
3.6 Describe the roles of skeletal muscles.	• Roles - agonists (prime movers), antagonists, synergists, fixators: ○ Examples in relation to exercises and movements. • Functions and properties of muscles: ○ Contract to create movement or assist in the stabilisation of joints. ○ Generate heat (shivering). ○ Keep the body upright by resisting the force of gravity: posture. ○ Protect the skeletal system by preventing excessive or unwanted movement. ○ Properties - contractility, extensibility, elasticity, and excitability.
3.7 Describe the process/principles of muscular contraction.	Interrelationship with nervous system: • All or none law. • Sliding filament theory, the role of actin and myosin, the formation of a cross-bridge during contraction, the role of ATP, motor neuron impulses, motor unit recruitment. • Stretch (myotatic) reflex and inverse stretch reflex. • Size principle of motor unit recruitment. • Other principles of muscle work (biomechanics and kinesiology). ○ Muscles only pull (apply force) on bones (levers), they cannot push, contract in direction of fibres. ○ Cross joints (fulcrum) and create movement.

	○ Work in pairs/groups. ○ Muscles roles (see previous points)
3.8 Outline the types of muscular contraction.	• Types of contraction: ○ Concentric and eccentric (isotonic). ○ Isometric. ○ Isokinetic. ○ The effects of gravity on muscle work and the effects of fixed resistance/pulley equipment on muscle work. • Advantages and disadvantages of isotonic/isometric movement in relation to everyday activity, activity for health and within an exercise and fitness session, to include: ○ Causes and effects of delayed onset muscle soreness (DOMS). ○ Valsalva effect; functionality and effects on blood pressure.
3.9 Outline the structure and function of the pelvic floor muscles.	• Structure: ○ Deep and superficial layers. ○ Fast and slow-twitch muscle fibres. ○ Muscle attachments. • Function: ○ Stability for the pelvic girdle. ○ Support for organs and growing foetus during pregnancy ○ Controlling continence. ○ As lower part of inner cylinder – stability (along with diaphragm, abdominals, back muscles). ○ Counteract changes in abdominal pressure.

4. Understand the classification, structure, and function of the cardiovascular system	
4.1 Summarise the structures of the cardiovascular system.	• Heart – myocardium (cardio): ○ Muscular pump. ○ Two halves – right (deoxygenated blood) and left (oxygenated blood). ○ Four chambers - right and left ventricles, right and left atria. ○ Valves (prevent back flow) – bicuspid, tricuspid, aortic, pulmonary.

	• Blood vessels (vascular):
	  ○ Comprise: arteries, arterioles (smaller versions of arteries) veins, venules (smaller versions of veins) and capillaries (smallest of the blood vessels).
	  ○ Capillaries:
	  ▪ Are the smallest blood vessels – one blood cell thick.
	  ○ Veins:
	  ▪ Carry blood towards the heart at low pressure.
	  ▪ Deoxygenated blood in all except the pulmonary veins.
	  ▪ Have thinner, less muscular walls.
	  ▪ Have a series of one-way (non-return) valves to prevent backflow of blood and require the assistance of skeletal muscle to help venous return.
	  ▪ The vena cava has two branches (inferior and superior) and returns blood from the body back to the right atrium.
	  ▪ The pulmonary veins return blood back to the left atrium.
	  ○ Arteries:
	  ▪ Carry blood away from the heart at high pressure.
	  ▪ Oxygenated blood in all arteries except the pulmonary arteries.
	  ▪ Are pressurised and have thick, smooth, muscular walls.
	  ▪ The aorta is the largest/major artery that carries blood from the left ventricle to the body.
	  ○ The pulmonary arteries carry blood from the right ventricle to the lungs.

4.2 Describe the function of the cardiovascular system.	• Location/size of the heart:
	  ○ Behind the sternum, just to the left of centre.
	  ○ Size of a clenched fist.
	• Functions:
	  ○ Circulation of:

	▪ Blood (deoxygenated/oxygenated) and nutrients, hormones, medications. • Terminology – definitions of: ○ Stroke volume – amount of blood pumped in one beat. ○ Cardiac output – amount of blood pumped in one minute. ○ Heart rate – beats per minute, pulse monitoring points, e.g. radial artery. • Effects of exercise on the above.
4.3 Outline the flow of blood around the systemic and pulmonary systems	• Systemic circulation– flow around heart and body: ○ From heart to body - aorta, arteries, arterioles, capillaries: gaseous exchange at muscular levels (mitochondria). ○ From body to heart – venules, veins, superior/inferior vena cava, right atrium (systemic). • Pulmonary circulation – flow around heart and lungs: ○ From lungs to heart – pulmonary vein, left atrium, left ventricle (pulmonary). ○ From heart to lungs - right ventricle, pulmonary artery: – gaseous exchange in lungs. • Interrelationship with respiratory system and muscular system – gaseous exchange.
4.4 Outline blood pressure: • classifications • systolic/ diastolic.	The body's need for blood pressure Definitions: • Blood pressure as a measure of force in the artery walls. • Systolic blood pressure: ○ The pressure in the arteries (contracting/pumping phase) • Diastolic blood pressure: ○ The pressure in the arteries (resting/filling phase). Classifications: • Systolic and diastolic readings: ○ Optimal, normal blood pressure classifications. ○ Hypotension, pre-hypertension and hypertension (different stages). • Current and up-to-date guidelines regarding blood pressure detailed from the following bodies: ○ World Health Organization (WHO) ○ National Institute for Health and Care Excellence (NICE) ○ American College of Sports Medicine (ACSM)

	• Effects of exercise on blood pressure:
	  ○ Linear increase.
	  ○ Issues when working with hypertensive clients.
	  ○ When exercise is contraindicated.

5. Understand the classification, structure, and function of the respiratory system	

5.1 Summarise the structure of the respiratory system.	Respiratory tract – upper and lower
	• Upper:
	  ○ nose and mouth
	  ○ pharynx
	  ○ larynx.
	• Lower:
	  ○ trachea (windpipe)
	  ○ lungs
	  ○ bronchus (bronchi)
	  ○ bronchioles:
	  ▪ Alveolus (alveoli) (capillaries) and location of gaseous exchange.
	  ▪ How the alveoli and capillaries link the respiratory and cardiovascular systems.

5.2 Outline the function of the respiratory system.	• The position of the lungs within the thoracic cavity
	• Function:
	  ○ Intake of oxygen.
	  ○ Removal of carbon dioxide.
	  ○ Gaseous exchange.
	  ○ Diffusion: the movement of molecules from an area of greater concentration to an area of lesser concentration.
	• The passage of air through respiratory tract during inhalation (inspiration) and exhalation (expiration):
	  ○ nose and mouth
	  ○ pharynx
	  ○ larynx
	  ○ trachea
	  ○ bronchi
	  ○ bronchioles
	  ○ alveoli.

	Terminology
	• Breathing (pulmonary ventilation: Inhalation/exhalation) - the process of physically moving air in and out of the lungs.
	• Respiration is the name given to the overall exchange of gases between the atmosphere and the blood and involves
	• External respiration – the exchange of gases between the lungs and the blood.
	• Internal respiration – the exchange of gases between the blood and the cells of the body.
	• The process of respiration:
	  ○ Take in air from the atmosphere – inhalation/inspiration.
	  ○ Gaseous exchange alveoli.
	  ○ Pass oxygen into the circulatory system.
	  ○ Remove carbon dioxide from the circulatory system via exhalation.
	• Composition of air during:
	  ○ inhalation
	  ○ exhalation.
	• Average respiratory rate – 12–20 breaths per minute:
	  ○ factors affecting respiratory rate and efficiency:
	  exercise
	  respiratory diseases – chronic obstructive pulmonary disease (COPD) Asthma, long covid, etc.

5.3 Outline the mechanism and control of breathing.	• Respiration is controlled by the respiratory centre located in the medulla oblongata of the brain.
	• Breathing is triggered by:
	  ○ Stimulation of the stretch receptors in the intercostal muscles.
	  ○ Rising carbon dioxide levels.
	  ○ Decreasing oxygen levels.
	  ○ Stimulation from phrenic nerves.
	  ○ Chemoreceptors.
	  ○ Decreased pH of the blood.
	• The function and location of each muscle involved in inhalation and exhalation.
	• Natural breathing:
	  ○ intercostals (internal and external)
	  ▪ Inspiration externals contract and lift ribs up.

	▪ Expiration externals relax and ribs lower. ○ Diaphragm: ▪ Inspiration contracts and descends. ▪ Expiration relaxes and ascends. • Forced inspiration (inhalation): ○ Accessory muscles - scalenes, pectoralis minor, and sternocleidomastoid. • Forced expiration (exhalation): ○ Accessory muscles – abdominals – transversus. • Differences/interrelationship: ○ Ventilation - getting air in and out. ○ Respiration - exchange of gases and transport of gases: ▪ Ventilation – air into lungs. ▪ Pulmonary diffusion – gaseous exchange in the lungs. ▪ Circulation of gases around the body. ▪ Tissue diffusion – use of oxygen for energy production and removal of CO_2. ○ Lung volume terminology/definitions: ▪ Residual volume - amount of air left in the lungs after exhalation. ▪ Tidal volume - amount of air moved in and out of the lungs in one breath. ▪ Vital capacity - maximum amount of air that can be forcefully inhaled and exhaled in one breath.
5.4 Outline the process of gaseous exchange.	• Gaseous exchange of oxygen and carbon dioxide in the body. • The role of the alveoli and capillaries in gaseous exchange: ○ Oxygen (alveoli) moves from the lungs to the bloodstream (capillaries). ○ Carbon dioxide passes from the blood (capillaries) to the lungs (alveoli) to be exhaled. • The process of the diffusion of gases from areas of high concentration to areas of low concentration.

6. Understand the classification, structure, and function of the nervous system	

6.1 Summarise the structure and divisions of the nervous system.	Main divisions:
	• Central nervous system (CNS):
	  ○ The brain and spinal cord.
	• Peripheral nervous system (PNS):
	  ○ Motor and sensory nerves that branch out from the spinal cord.
	• PNS is divided into:
	  ○ Somatic nervous system.
	  ○ Autonomic nervous system (ANS).
	  ○ Two sub-divisions of autonomic nervous system (ANS):
	  Sympathetic (speeds up processes).
	  Parasympathetic (slows down processes).

6.2 Describe the functions of the nervous system.	• Communication and control system of body.
	• Works collaboratively with the endocrine system.
	• Maintaining homeostasis.
	• Three key roles:
	  1. Sensory – detects changes in the body's internal environment and gathers information about the external environment. Information is received from different stimuli.
	  Role of internal receptors:
	  ▪ Chemoreceptors (chemical).
	  ▪ Thermoreceptors (temperature).
	  ▪ Baroreceptors (blood pressure).
	  ▪ Proprioceptors (body positioning).
	  2. Interpretation – analyses and interprets the changes sensed and selects the appropriate response.
	  3. Motor output – responds to the changes by signalling the required action, e.g. The secretion of hormones from the endocrine glands, or by initiating muscle contraction.

6.3 Outline the role of each subdivision of the peripheral nervous system:
• somatic
• autonomic
	• Somatic nervous system:
	  ○ Motor and sensory nerves that connect the PNS to muscles and are involved in conscious activities (Voluntary muscle actions).
	• Autonomic nervous system:
	  ○ Motor and sensory nerves that connect the PNS to smooth and cardiac muscle and are involved in

	involuntary actions such as digestion, control of blood pressure etc. ○ Two divisions autonomic nervous system (ANS): ▪ Sympathetic (fight or flight, war) – speed up. ▪ Parasympathetic (rest and digest, peace) – slow down. • Afferent and efferent nerves: ○ Afferent nerves (sensory neurons) carry messages from the body receptors to the CNS. They are the first cells to receive incoming information. ○ Efferent nerves (motor neurons) carry messages from the CNS to the muscles and glands. ○ Interneurons (relay neurons) enable communication between sensory or motor nerves and the CNS.
6.4 Outline the structure of nerves.	• Structure and function of: ○ axons ○ dendrites ○ cell body ○ nucleus ○ myelin sheath ○ schwann cells ○ nodes of Ranvier ○ synapses.
6.5 Outline the process of a nerve impulse	• Interrelationship with the muscular system: ○ Action potentials: how nerve impulses are conducted. ○ Basic sliding filament theory. ○ Role of actin and myosin in the formation of a cross-bridge during contraction. ○ The role of ATP. ○ The 'all or none' law. ○ Motor neuron impulses, motor unit recruitment.

6.6. Outline the function of:
• motor units
• proprioceptors
• muscle spindles
• golgi tendon organs.
	• Motor unit comprises one motor nerve and all the muscle fibres it causes to contract.
	  ○ The number of these muscle fibres can vary from 1 or 2 to 1000:
	  ▪ A stimulus must be strong enough to trigger an action potential to pass down the motor neuron.
	  ▪ All muscle fibres within a single motor unit will be maximally innervated by the action potential or none will.
	  ▪ The size principle of motor unit recruitment. Motor units are recruited in order of size, from small to large.
	• Proprioceptor is a sensory organ which receives stimuli from within the body, to give detailed and continuous information about the position of the limbs and other body parts.
	• Muscle spindle is a proprioceptor located within the body of a skeletal muscle that primarily detect changes in the length of the muscle.
	• Golgi tendon organ (GTO) is a proprioceptor located within a tendon that detects how much tension being transferred into the muscle.
	• Interrelationship of proprioceptors with exercise:
	  ○ Stretching (lengthening)– PNF and developmental stretching.
	  ○ Muscle contraction – the more motor units which are activated, the greater the strength of contraction.

7. Understand the classification, structure, and function of the endocrine system

7.1. Summarise the structure of the endocrine system:

- major glands
- hormones.

7.2 Describe the functions of the endocrine system:

- hormones
- major glands and the hormones they secrete.

Structure:

- Comprised of several glands that produce and secrete hormones.
- Hypothalamus (the 'master gland') because it controls the pituitary gland:
  - Controls most of the other endocrine glands in the body
  - Connects the nervous and endocrine system.
- Location of different glands (see table below).
- Function of other glands and hormones (see table).
- Different types of hormone, e.g. steroid, peptide, anabolic, catabolic.
- How endocrine and nervous system communicate, e.g. feedback loops.

Gland	Hormone (to include)	Action/role (to include)
Thyroid	Thyroxine	To regulate metabolism of all cells and tissues in the body.
Parathyroid	Parathyroid hormone (PTH)	To control calcium levels within the blood.
Pituitary	Human growth hormone (HGH)	To regulate body composition, body fluids, muscle, and bone growth.
Pineal	Melatonin	To help maintain normal sleep patterns.
Adrenal	Epinephrine (adrenaline) Norepinephrine (noradrenaline)	Initiates sympathetic responses to stress (fight or flight).
	Cortisol	Regulates conversion of fats, proteins, and carbohydrates to energy.

	Pancreas	Insulin	Helps cells to take in glucose to be used for energy, i.e. lowers blood sugar levels.
		Glucagon	Signals cells to release glucose into the blood, i.e. raises blood sugar levels.
	Ovaries	Oestrogen	Female 'characteristics' Breast development
		Progesterone	Menstrual cycle/egg production Promote fat storage
	Testes	Testosterone	Male 'characteristics' include increased muscle, bone mass, and the growth of body hair.

8. Understand the classification, structure, and function of the energy systems	

8.1 Describe the three energy systems.	• Definitions of terms:
	  ○ Aerobic – with oxygen.
	  ○ Anaerobic – without oxygen.
	• Three energy systems:
	  ○ Creatine phosphate (CP) or phosphocreatine (PC).
	  ○ Anaerobic Glycolysis/Lactic acid.
	  ○ Aerobic.
	• The energy systems resynthesise adenosine triphosphate (ATP) which is the energy currency of the body but is stored in limited amounts.

8.2 Summarise the role of the energy systems in the resynthesis of adenosine triphosphate.	• Anaerobic - creatine phosphate or phosphocreatine (ATP-PC or Alactic system):
	  ○ ATP and creatine phosphate (CP) are present in very small amounts in the muscle cells – so limited stores.
	  ○ Can supply energy very quickly because oxygen is not needed for the process - but only lasts up to 10 seconds.
	  ○ No lactic acid is produced in the process (Alactic) so no harmful waste products.

	○ By-product creatine (non-fatiguing) is replenished (around 3-5 minutes rest). ○ Activities -high intensity, very short duration. • Anaerobic lactic acid (glycolytic) system: ○ Uses carbohydrates (glucose) stored in the muscles as glycogen without oxygen. ○ Energy is produced quickly – lasts around 2 minutes if trained. ○ Fatiguing by product - lactic acid (muscle burn/oxygen deficit). ○ Activities - moderate to high intensity, short duration. • Aerobic system (with oxygen): ○ Uses carbohydrates (glucose/glycogen) and fats to replenish ATP with oxygen. ○ Because oxygen is required for the process, energy production takes longer but can continue for a much longer duration. So slower to engage but can continue for a longer duration. ○ Because of the presence of oxygen, no lactic acid is produced. ○ Waste products - CO_2, and water (removed easily and non-fatiguing). ○ Activities - low to moderate intensity, long-term duration. ○ Role of mitochondria (only in aerobic energy production) Cellular structure which turns the energy in food into fuel that the cell can use for energy (ATP). Role of each macronutrient in energy production. • Metabolism or metabolic processes (chemical processes) comprises catabolism and anabolism ○ Catabolism – breakdown of nutrients for energy production (destructive/breaks down) ○ Anabolism – body uses energy released by catabolism to remake ATP (constructive – rebuilds). The effects of exercise on energy systems**:** • How each energy system works in conjunction with the others (not insolation) to produce energy in a range of activities • How exercise variables result in the adaptation of the relative contribution of each energy system • Predominant system depends on intensity and duration. ○ the effects of intensity (increased intensity would increase the contribution of the anaerobic systems)

	○ the effects of duration (longer-duration activities would require increased input from the aerobic energy system because the anaerobic systems cannot function effectively for long periods) ○ Excess post-exercise oxygen consumption (EPOC). - the amount of oxygen the body needs to remove lactic acid and repay the oxygen debt (and return to normal after exercise) ○ Interrelationship between energy systems and efficiency of cardiovascular, respiratory and muscular systems.

9. Understand the interrelationship between the anatomical and physiological systems	
9.1 Explain the Interrelationship of the body system: • movement systems - musculoskeletal system. • fuelling systems – circulatory, respiratory, energy • response systems – nervous, endocrine.	All body systems work together: • If one system is malfunctioning due to disease, then all systems will be impacted to a greater or lesser extent. • Activity and exercise will affect all systems, in some way. • The body systems change through the lifespan. • Some examples of interrelationship: ○ Respiratory system takes in oxygen that is circulated by the cardiovascular and circulatory system. ○ Oxygen transported by the cardiovascular system is used by the muscles (and other body cells) to produce energy. ○ All body cells and systems require energy (ATP and energy systems) for daily living as well as movement. ○ Hormones and nutrients (endocrine and digestive system) are circulated by the cardiovascular system. ○ The nervous system controls movement of the body stimulating muscles (muscular system) to contract and pull on the bones (skeletal system). ○ The endocrine system and nervous system are main communication and control systems of the body (chemical and electrical). ○ Endocrine glands release hormones which are circulated by the cardiovascular and circulatory system. ○ The heart, a component of the circulatory system, responsible for pumping blood is also a muscle (cardiac) and is controlled by the nervous system.

10. Understand lifespan changes which affect the body system, health, and wellbeing	
10.1 Outline the effects of different lifespan changes to the body systems: • young people (13-18) • antenatal and postnatal period • older adults (50 plus)	All body systems change in response to the lifespan, particularly: • Young people in the 13–18 age range, to include: ○ skeletal development (endomorphs, ectomorphs, mesomorphs) ○ growth and development of the spine ○ maturation of the skeletal system (13–18 years) ○ growth plates and injury risk ○ % muscle mass changes from birth ○ age at which bone growth complete ○ body fat differences in adolescence ○ obesity levels increasing and body mass index (BMI) measures • Ante- and post-natal, to include: ○ skeletal system changes including potential postural changes ○ hormone changes – effect of relaxin and other hormones including Human Chorionic Gonadotropin (HGC), progesterone and oestrogen ○ changes affecting balance ○ considerations for exercise including warning signs – suitable exercise pre 16 weeks and post 16 weeks together with considerations for post-natal • Older people (50 plus), to include: ○ ageing and the musculo-skeletal system ○ hormone changes, including effects of menopause ○ loss of bone mass and effects of exercise ○ changes in osteoblast/osteoclast activity ○ implications of reduction in bone-mineral density and connective tissue osteopenia/osteoporosis and gender differences osteoarthritis hyaline cartilage wear and tear increase risk of falls and fractures joint degeneration reduced range of motion

	○ Sarcopenia – loss of muscle mass and effects on strength ○ CVD risk and ageing between genders (men at greater risk from younger age and women after menopause) ○ Exercise considerations and risks **NB: Additional qualifications are required to work with the groups in this section.**

11. Understand the effects of exercise on the body systems	
11.1 Describe the short-term effects which exercise has on the musculoskeletal system.	• Muscle temperature and overall core body temperature increases. • Levels of lactic acid in the blood rise, causing a burning or aching sensation in the muscles: ○ temporary muscle fatigue. • Greater ease of joint movement due to: ○ increased flow and viscosity of the synovial fluid into the joints ○ nourished cartilage as a result of the increased synovial fluid into the joints. • Increased metabolic activity. • Increased demand for oxygen. • Increased dilation of capillaries within the muscle. • Increased pliability of muscle and connective tissue (more flexible and stretchy). • DOMS may be experienced (one to two days after training)
11.2 Describe the short-term effects which exercise has on the circulatory and respiratory systems of the body.	• Increased breathing rate and depth of breathing to bring more oxygen into the body and remove carbon dioxide. • Increased tidal volume. • Increased efficiency of gaseous exchange. • Vasodilation of blood vessels to the muscles. • Vasoconstriction of blood vessels to the internal organs. • Anticipatory heart rate. Before starting exercise the heart rate will increase slightly in anticipation of the forthcoming activity. This is in response to nervous and chemical signals that supply the heart. • Increase of heart rate to circulate blood and oxygen. • Increase of stroke volume (a greater amount of blood will be pumped on each beat of the heart).

	• Increased cardiac output (a greater amount of blood will be pumped by the heart in one minute). • Increase in systolic blood pressure. • Vasodilation of the capillaries – the capillaries widen to enable increased blood to pass through. • Increased blood flow to muscles. • Redirection of blood flow. During exercise, blood flow will be prioritised to the areas in greater need of supply, e.g. the muscles. The supply of blood to other body areas, such as the kidneys, will reduce to enable this redirection.
11.3 Describe the short-term effects which exercise has on the response systems of the body.	Nervous system • Neuromuscular pathways engaged. • Increased nerve to muscle connection. Energy systems • ATP broken down to produce energy • ATP re-synthesised through different energy systems, depending on intensity and duration of activity and individual fitness (physiological adaptations) • Lactic acid build up during high intensity activities – 'the burn' • Increase in lactate production Endocrine system • Increased number of hormones circulating. • Strengthens receptor sites at target organ cells. • Exercise programmes that include intense bursts of energy may stimulate the release of thyroxine from the thyroid gland. • Improved circulation of blood (epinephrine and thyroxine) • Release of hormones like endorphins and adrenaline
11.4 Describe the long-term effects which exercise has on the musculoskeletal system.	Skeletal • Improved bone mineral content (increase in bone density • Improved development of peak bone mass in formative years (up to age 30) • Maintenance of bone mass pre-menopausal • Reduces rate of bone loss - post menopause • Reduced risk of osteoporosis. • Improved release of synovial fluid into the joints. • Cartilage is nourished by synovial fluid, which can assist with the management of osteoarthritis and maintains joint health.

	• Improved joint mobility and range of motion. The joints able to move through their full potential range of motion. • Hyaline cartilage becomes thicker, protecting the joints against wear and tear. • Stronger ligamentous attachments • Improved stability of the joints (due to stronger muscular support) • Reduced risk of joint injury • Reduced risk of falls and bone fractures in older adults with osteoporosis. • Improved posture and joint alignment • Reduced risk of low back pain Muscular • Hypertrophy of muscle fibres (increase in size due to increased number of myosin and actin within muscle) • Increased muscle strength and endurance. • Improved muscle tone and shape. • Improved capillarisation of muscles and greater potential for delivery of oxygen and nutrients and removal of waste products improves endurance. • Increased size and number of mitochondria in muscles to enable greater aerobic energy production. • Improved posture. • Stronger tendinous attachments Risks • Increased risk of injury. • Increased loading placed on synergists. • Shortening/weakening. • Poor technique may lead to altered roles (e.g. synergists/fixators becoming prime movers). • Overuse. • Delayed onset muscular soreness (DOMS).

11.5 Describe the long-term effects which exercise has on the circulatory and respiratory systems of the body.	• Increased strength of intercostal muscles and diaphragm which enables the chest cavity to expand:
	  ○ increased tidal volume
	  ○ increased vital capacity.
	• Decreased breathing rate.

	• Improved potential for gaseous exchange. • Stronger heart (cardiac muscle). The left ventricle thickens (hypertrophy) to enable more forceful contractions. ○ Increased resting and maximal stroke volume. ○ Increased maximal cardiac output. • Greater heart efficiency: ○ Improved recovery heart rate. ○ Decreased resting heart rate (heart rate at rest). ○ Lower working heart rate at same intensity or effort. • Increased number of capillaries in muscles: ○ Improved blood flow to working muscles. ○ Increased potential for oxygen delivery to muscles. ○ Increased potential for removal of waste products (lactate) from the muscles. ○ Lowering of blood pressure. • Increased size and number of mitochondria (cells used for aerobic energy production).
11.6 Describe the long-term effects which exercise has on the response systems of the body.	• Nervous system ○ Strengthening of existing nerve connections and development of new ones ○ Improved synchronisation of motor recruitment which helps achieve stronger muscular contractions ○ Improved balance due to improved efficiency of proprioceptors ○ Improved reaction times due to increased frequency and strength of nervous impulses ○ Improved agility due to improved speed and frequency of signal and neural connections ○ Improved neuromuscular pathways and connections ○ More effective transmission of nerve impulses ○ Improved proprioception – spatial and body awareness ○ Improved skill-related fitness (motor fitness) Power. Speed. Reaction time. Agility.

	Coordination. Balance. ○ Improved motor unit recruitment • Energy systems – links with 12.5 ○ Aerobic adaptations. ○ Stronger heart (cardiac muscle) to enable more forceful contractions. ○ Increased resting and maximal stroke volume. ○ Increased maximal cardiac output. ○ Improved blood flow to working muscles. ○ Decreased resting heart rate (heart rate at rest). ○ Lower working heart rate at same intensity or effort. ○ Increased size and number of mitochondria (cell organelles used for aerobic energy production). ○ Increased number of capillaries in muscles. ○ Increased potential for oxygen delivery to muscles. ○ Increased potential for removal of waste products from the muscles. • Anaerobic adaptations ○ Increased storage capacity of creatine phosphate and muscle glycogen. ○ Improved resistance to fatigue during anaerobic conditions (lactate tolerance). ○ Improved efficiency at removing lactic acid and by-products. ○ Improved recovery rate after high-intensity exercise. • Endocrine system ○ Increases in testosterone and human growth hormone post resistance training. ○ Improved insulin sensitivity. ○ Increases in insulin growth factor-1. ○ Greater glucagon production. ○ Impaired adrenal and growth hormone responses during overtraining. ○ May improve organ function. ○ Increased metabolic rate, which may assist weight management. ○ Reduced risk of diabetes.

	○ Improved mental state (endorphins). ○ Improved confidence and motivation (testosterone). ○ Reduced tension and anxiety (endorphins). ○ Euphoria (endorphins). ○ Reduced sensitivity to pain (endorphins)

The role of physical activity and exercise in the prevention and management of long-term health conditions (H/651/1818)

Unit aim

To provide the knowledge of the role of physical activity in the prevention and management of long-term health conditions.

Learners will know:

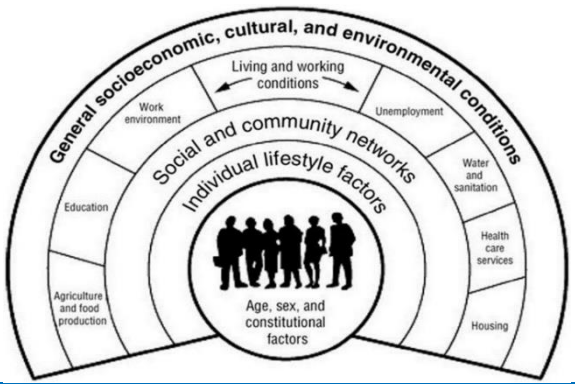
- the signs, symptoms and progression of specific health conditions
- the causes and prevalence of specific health conditions
- how health conditions are treated and managed
- contraindications and risks for exercise
- the benefits of referral to exercise and stages of the referral process.

Content

1. Understand long-term health conditions and their effect on health, wellbeing and participation in physical activity and exercise	
1.1 Describe the signs, symptoms and disease progression for specified long-term health conditions	• Signs and symptoms and pathophysiology/disease progression of the following health conditions: ○ hypertension ○ hypercholesterolaemia ○ hyperlipidaemia ○ hypothyroidism ○ hyperthyroidism ○ coronary heart disease (post-phase IV rehabilitation) ○ peripheral vascular disease ○ diabetes type 1 and 2 ○ obesity ○ chronic obstructive pulmonary disease (COPD) ○ asthma ○ osteoarthritis ○ rheumatoid arthritis

	○ osteopenia ○ osteoporosis ○ low back pain ○ joint replacement ○ depression ○ stress ○ general anxiety disorder. **NB: See appendices 2 and 3 for guidance on scope and inclusion.** • With consideration to changes to the body systems appropriate to specific conditions (progressive and over time): ○ skeletal – i.e. bone density, joint mobility, range of motion (ROM), alignment and posture ○ neuromuscular – i.e. posture, pelvic floor, power, strength, endurance, sarcopenia, heat production, immune function, fine motor control, coordination, balance and falls risk, reaction time (including ability to respond to instructions), movement speed, sight and hearing, short term memory ○ cardiovascular – i.e. reduced anaerobic threshold, reduced exercise tolerance and ability to sustain activity ○ respiratory - i.e. breathlessness ○ cognitive – short-term memory ○ psychosocial – i.e. low mood, low energy, loss of interest in life. • Consider for all conditions: ○ age of onset ○ management (see treatment 1.3) ○ individual attitude and response to diagnosis, including cognitive processing time (locus of control) ○ the importance of mental health and wellbeing for people at high(er) risk of developing, or living with, single LTCs or comorbidities and the factors that can influence an individual's wellbeing.
1.2 Outline the risk factors and causes for specific long-term health conditions	• Genetics/heredity factors. • Effects of ageing. • The importance of mental health and wellbeing for people at high(er) risk of developing, or living with, single LTCs or comorbidities and the factors that can influence an individual's wellbeing.

	• Other lifestyle related risk factors:
	  ○ physical inactivity – identified as one of the top ten causes of diseases and disabilities in England and is responsible for one in six deaths in the UK (Sport England, 2022)
	  ○ smoking
	  ○ alcohol misuse
	  ○ unhealthy eating.
	• Modifiable and non-modifiable risk factors.

1.3 Describe the wider determinants of health, their impact on health inequalities and on an individual's health	• Wider health determinants – economic, social and environmental, and inequalities as outlined by the World Health Organisation (WHO).
	• Wider or social determinants of health are the various non-medical factors that affect health outcomes, such as social, economic, environmental, political, commercial and cultural factors.
	• Some examples of wider 'determinants' would include:
	  ○ the number of fast-food outlets on the high street, which has the potential to influence levels of obesity and diabetes
	  ○ the availability or work opportunities in a specific location
	  ○ the accessibility or availability of services to support health in a location
	  ○ poverty levels.
	• Health inequalities are unfair and avoidable differences in health across the population and between different groups within society. These include how long people are likely to live, the health conditions they may experience and the care that is available to them (NHS England).
	Determinants of Health (Dahlgren and Whitehead model) from: Public Health England (2017).
	 

	Can impact: • longevity of life, life expectancy • health care accessible and available • prevalence of some health conditions (e.g. some populations are at greater risk of some conditions).

1.4 Describe how specific long-term health conditions are medically treated and managed	• Use of National Institute for Health and Care Excellence (NICE) guidance for specified conditions, including activity recommendations where specified.
	• Medical management – surgery, medication. With consideration to:
	  ○ desired effects of medication or other treatment (e.g. surgery)
	  ○ side effects of medication or other treatment (e.g. surgery)
	  ○ effects on the exercise response (e.g. heart rate, blood pressure, balance, exercise tolerance, functional capability, energy levels, etc.)
	  ○ credible sources to gather information about medication (British National Formulary (BNF) and monthly index of medical specialities (MIMS)).
	• Effects of some treatments and medication on quality of life, including functional and mental capacity.

1.5 Explain lifestyle changes recommended to assist the prevention and management of specific long-term health conditions.	• General/lifestyle recommendations for specific conditions (use NICE, British heart foundation (BHF) and other credible and reliable sources):
	  ○ Eat well guidance for healthy adults.
	  ○ Current chief medical officer's (CMO) guidance for physical activity.
	  ○ Wellbeing and wellness practices, including mindfulness, breathing exercises, stress management and cognitive behavioural therapy (CBT).
	  ○ Smoking cessation.

1.6 Identify the prevalence of specific long-term health conditions	• Percentage of population with specific long-term health conditions (use of current statistics).
	• With consideration to:
	  ○ prevalence of conditions for different groups:
	  – sex
	  – age
	  – ethnicity

	– disabilities – physical, visual, hearing. ○ Effects of wider health determinants – social, economic and environmental factors (non-medical). ○ The number of years lived without a chronic health condition has reduced: – age 62 years for men – age 60 years for women. ○ More people have more than one health condition: – 1/3 of all adults in their late 40s has two or more chronic health conditions (Hall in the Guardian. 2021). ○ The ageing population in the UK is increasing. ○ Multiple health conditions increase the risk of frailty in later life, which can lead to loss of independence, reduced quality of life and increased risk of hospital admissions and death. Reference sources listed in appendix: ○ Centre for ageing better ○ NHS ○ Hall, in the Guardian, 2021.
1.7 Explain how specific long-term health conditions may affect participation in exercise	• With consideration to: ○ specific health conditions ○ associated risk factors – see 3.2 ○ effect of ageing, injury and disease on functional capacity and health outcomes ○ individual attitude and their locus of control ○ the physiology and psychology of pain and how this may impact upon the functional and mental capacity of an individual. • Effects on: ○ suitability of specific types of activity and exercise ○ session planning and design – unit 2 ○ session delivery – units 2 and 3 ○ risk stratification – see screening and assessment (unit 2) and impact on: – scope of practice – level of instruction and supervision

	– need for specialist support and supervision for those with more declining health, increased age and/or significant loss of capacity (higher risk) – higher level of support may include physiotherapy teams/specialist teams, postural stability instructor (PSI). ○ Appropriate exercise settings – clinical, leisure facilities (studio, gym), community, home-based etc.
1.8 Explain the impact of specific long-term health conditions, their medical management and associated risk factors on quality of life	• Functional movement and ability to perform activities of daily living. • Mental health. • Longevity of life. • Quality of years lived.

2. Understand the role of physical activity and exercise in the prevention and management of long-term health conditions	
2.1 Identify guidelines and recommendations for physical activity and exercise for specific long-term health conditions	• Use of ACSM guidelines and recommendations. • Use of NICE guidance and recommendations. • Use of health charity specific guidance and recommendations. See Appendix 1: Information sources. **NB: It is recommended that as part of delivery, centres include examples of practical sessions delivered for (and ideally with) individuals with health conditions**.
2.2 Explain the benefits of physical activity and exercise to support successful ageing and assist with the prevention and management of specific long-term health conditions	• Effects of ageing, physical inactivity and long-term health conditions on anatomy, physiology and biomechanics. • The protective effects of physical activity and exercise for both the prevention and management of specific long-term health conditions: ○ difference between physical activity and exercise ○ reference to the current Chief Medical Officer's (CMO) guidance ○ successful and active ageing and quality of life. • How exercise can support successful ageing and benefit management of specified long-term health conditions (NICE guidance).

	• With consideration to:
	  ○ the physiological, biomechanical, anatomical and psychological response to physical activity:
	  – short-term and immediate effects – increase to heart rate and breathing rate, muscle temperature, blood pressure, etc.
	  – long-term effects – stronger heart, increased stroke volume, regulate blood pressure, increase bone density, etc.
	  – effects associated with different types of exercise and components of fitness.
	  ○ Longer-term benefits:
	  – maintaining independence
	  – improving fitness and maintaining ability to perform activities of daily living and continue leisure pursuits
	  – supporting the management of existing health conditions and minimising effect on functioning
	  – maintaining psychological well-being
	  – maintaining and building social connections.

2.3 Explain the barriers to physical activity and exercise for adults with long-term health conditions and how to overcome these	• Awareness of segmentation tools to support understanding of barriers, motivators and activity preferences.
	• Real and perceived barriers:
	  ○ psychological barriers – lack of confidence, self-efficacy, self-esteem, mental health (depression, anxiety), fear of making health conditions or injuries worse, fear of being too old or not fit enough etc.
	  ○ physical/environmental barriers – accessibility and availability of appropriate activities, cost, location, method of booking sessions (e.g. use of apps etc.) transport links, lack of transport, suitability of exercise sessions, suitability of instructors
	  ○ barriers/concerns linked with health:
	  – medical diagnosis and conditions, e.g. osteoarthritis etc.
	  – medications and their effects
	  – comorbidities and multimorbidities
	  – functional, strength and balance – falls risk and fear of falling, mobility issues, vision and hearing

	– cognitive impairments – memory, responding to instructions, etc. • How to support individuals and overcome barriers to promote active ageing. • The importance of mental health and wellbeing for people with high(er) risk of developing or living with long-term conditions and the factors that can influence an individual's wellbeing.
2.4 Explain motivators for physical activity and exercise for adults with long-term health conditions	• Consideration of behaviour change models. • Awareness of segmentation tools to support understanding of barriers, motivators and activity preferences. • Specific motivators: ○ recommendation of GP ○ support of family and friends ○ personal motivators – self-determination, gender, life stage ○ positive mental health as a motivator ○ maintaining independence and functioning ○ reduce risk of chronic health conditions ○ management of chronic health conditions ○ management of mental health and wellbeing ○ improve quality of life ○ socialisation and structure for day – getting out of house.
2.5 Outline appropriate methods to promote exercise, physical activity and wellbeing initiatives to support adults with long-term health conditions	• The principles of self-management which enable participants to maintain physical activity and other lifestyle changes beyond the intervention. • The role of evidence-based technologies that support the uptake and maintenance of physical activity. • Other health interventions and other wider community assets that can support the participant. • Knowing how, when and where to signpost, e.g. health trainers, Improving Access to Psychological Therapies (IAPT), smoking cessation, physiotherapy, pharmacy. • Support services – GP, charities, exercise referral services, leisure services. • Local physical activity opportunities to signpost individuals onward. • Range of promotional and marketing strategies. • Link to motivators – (see above – 2.4) – wellbeing and health.

	• Appropriate images – positive, inclusive.
	• Helpful language and messages.
	• Consider targeted and specific marketing for gender, ethnicity, socio-economic status, health status, identity and how individuals identify.
	• How to communicate the impact of exercise on the human body in simple terms to a participant.
	• Peer mentoring.
	• Ongoing and emerging research and initiatives to support lifestyle and behaviour change interventions:
	  ○ one-to-one, group and peer behaviour change support
	  ○ face to face versus remote communication, e.g. digital, print and telephone
	  ○ combined interventions to meet the needs of individuals with long-term health conditions, including those with health inequalities
	  ○ the use of customer relationship management (CRM) systems to monitor change in behaviour and to track and tailor follow up motivational support based on individual need and circumstance.

3. Understand the risks and contraindications to exercise for adults with long-term health conditions	

3.1 Identify the contraindications to exercise	• Reference to the current American College of Sports Medicine guidelines for specific conditions (PAR-Q+ and Algorithm).
	• Use of NICE guidance (condition specific recommendations and guidelines).
	• Use of information to guide recommendations on participation/deferral/referral and referral sources (e.g. GP).
	• Absolute contraindications for exercise (General) – use ACSM guidelines for exercise testing and prescription, such as:
	  ○ any uncontrolled or unstable condition, e.g. not managed by medication
	  ○ resting systolic blood pressure at (or above) 180mmHg/DBP 100mmHg (BHFNC. 2010)
	  ○ uncontrolled resting tachycardia at or above 120 bpm
	  ○ experiences a negative change or increase in pain during exertion

	○ dizziness or excessive breathlessness during exertion ○ significant postural hypotension. • Absolute contraindications specific to different conditions. Reference sources (listed at end): ○ American College of Sports Medicine (ACSM) Guidelines for Exercise Testing and Prescription ○ BHFNC toolkit ○ NICE guidelines (condition specific) ○ ACSM Exercise Management for Persons with Chronic Diseases and Disabilities.
3.2 Explain the risks associated with participation in exercise for specific long-term health conditions and ways to manage these risks	• Risks (accidents and emergencies) associated with specific long-term health conditions: ○ hypoglycaemia ○ strains and sprains ○ exercise induced asthma (EIA) ○ breathlessness ○ joint pain and discomfort ○ loss of balance, falls risk and fractures ○ cardiac incidents – angina, heart attack ○ dizziness and fainting ○ cramps ○ hyperthermia ○ dehydration ○ myocardial infarction. • Condition negatively impacted/worsening. • Reduction in self-esteem. • Effects of common functional impairments that increase risk of participation: ○ risk of falling or fear of falling ○ hearing, speech and sight impairments ○ memory or cognitive decline ○ proprioception ○ soft tissue injury ○ joint pain ○ fatigue

	○ grip ○ range of motion ○ motivation ○ muscle strength ○ reaction time ○ ability to transition from floor to stand ○ ability to perform certain exercises ○ ability to achieve specific workloads ○ energy levels and effort required to complete specific tasks. • The importance of contingency planning to manage any identified risks, which may include deferral or referral of exercise and signposting to specialist services (e.g. falls prevention service).
3.3 Outline the side effects of common pharmaceutical treatments and their implications for exercise tolerance and functional capability	• Effects of specific medication(s) may include alterations to: ○ alertness ○ posture ○ balance ○ falls risk ○ proprioceptive feedback ○ exercise intensity and heart rate and blood pressure response ○ urinary urgency and frequency ○ postural hypotension ○ masked pain levels ○ coordination and reaction time.
3.4 Explain how multiple health conditions **and medications** may affect risk stratification and readiness to participate	• Effects on risk stratification and scope of practice ○ When multiple health conditions are present, this may increase risk stratification. ○ Individuals with higher or high-risk stratification are outside of scope of practice. ○ Multiple medications (4+) increases risk of falls in older adults.
3.5 Outline considerations for managing risks for individuals with comorbidities and	• See LO1 for risks. • See AC4.2 for exclusion criteria. • Define comorbidities and multiple morbidities. • Awareness of absolute contraindications.

multiple morbidities, including reasons for exclusion	• Signposting to other professionals if needs exceed scope.
	• Requirement for higher level qualifications, depending on risk stratification.
	• With consideration to own ability, competence and confidence to:
	  ○ manage any potential medical emergency/risks associated with conditions
	  ○ consider all specific conditions in exercise planning
	  ○ adapt exercise to meet individual needs
	  ○ apply principles of training to modify and adapt exercise (if within scope of practice).
	Information sources:
	  • Richmond Group of Charities (2018) Multimorbidity Report listed in the references.

3.6 Evaluate different risk stratification models used to assess risk of participation.	• PAR-Q+ and e-PARmed-x +.
	• ACSM algorithm.
	• Irwin and Morgan.
	• Health and Safety Executive – risk assessment tool (not condition specific).
	• With consideration to other specific questionnaires, such as:
	  ○ falls risk and balance (FRAT and CONFbal)
	  ○ back pain questionnaires (Oswestry and Roland-Morris etc.)
	  ○ Mental Health (PHQ-9 etc.).
	NB: centres may evaluate a broader range of additional questionnaires. Those listed are shared as examples.

4. Understand guidelines for best practice when delivering physical activity and exercise for adults with long-term health conditions	

4.1 Identify a range of evidence-based information sources to support working with adults with long-term health conditions	• Evidence-based information sources:
	  ○ Chief Medical Officer (CMO) guidance – most current – 2019
	  ○ American College of Sports Medicine (ACSM)
	  ○ research studies on specific long-term health conditions.
	• Other information sources:

	○ Public Health England – healthy eating and stop smoking brief, change4life ○ Association for Nutrition (AfN) – competence framework – healthy eating and nutrition. • GP and other healthcare services (e.g. physiotherapists): ○ local and national charities – specific health conditions, e.g. British Heart Foundation, Diabetes UK, Asthma UK ○ the benefits of working with other services to support participation in physical activity. • Uses: ○ to support health outcomes ○ to assist activity planning ○ to inform own understanding. See Appendix 1: Information sources.
4.2 Explain own working role and responsibilities and the importance of working within scope of practice and the boundaries of personal and occupational competence	• Refer to roles and responsibilities outlined in the exercise referral toolkit (2010). • Importance or working in scope: ○ client safety and wellbeing ○ maintain professional practice and role boundaries ○ adhere to insurance guidance ○ adhere to safeguarding legislation • With consideration to industry code of conduct, ethical issues and other associated codes of conduct (e.g. Association for Nutrition – AfN) relevant to the role in terms of both relationships with clinicians, nutritionists/dieticians, referring professionals and participants. • Inclusions for this qualification: ○ conditions listed at 1.1 ○ stable and controlled only and not in progressed stages or with complications. • **Exclusions:** requirement for additional qualifications: ○ conditions not listed at 1.1 ○ any condition in more progressed stage ○ adults with multiple health conditions, higher risk stratification and declining capacity ○ frailer and dependent older adults – falls and fracture risk – significant loss of capacity (Postural stability instructor - PSI)

	○ cardiovascular events – stroke, heart attack, angina (British Association of Cardiovascular Prevention and Rehabilitation – BACPR) ○ respiratory conditions – severe and very severe ○ mental health conditions – more severe and enduring (eating disorders, substance misuse, bipolar, schizophrenia, etc.) ○ cancer ○ spinal cord injury ○ connective tissue disease ○ neurological conditions (multiple sclerosis, Parkinson's disease, dementia, fibromyalgia, chronic fatigue syndrome). • If in doubt, lacking confidence regarding skills and knowledge (or the appropriateness of the content and structure of a specific type of session), this may also be reason for exclusion. **Please note:** • Risk stratification for participation in exercise is currently determined by the use of different tools (e.g. ACSM algorithm, PAR-Q+ and Irwin and Morgan). • The level of risk in an exercise and activity environment will be impacted by several factors, including: ○ the risk stratification tool(s) used to assess risk ○ lifestyle factors an individual presents with (e.g. inactivity, smoking etc) ○ the individual's functional movement ○ the side effects of medications taken, and number of medications taken ○ the type and intensity of exercise planned ○ the exercise environment and factors that affect the environment (e.g. space and temperature) ○ the exercise equipment used ○ the delivery and instructions skills of the instructor ○ the ability of the instructor to adapt, modify and tailor specific exercises. • A full risk assessment should be undertaken to assess the level of risk. • It is the role and responsibility of the exercise instructor to make informed decisions prior to making recommendations for participation in exercise.

	• Informed decisions need to be based on all the information gathered from participants and this needs to be considered specifically in relation to the type of exercise session and activities being recommended. See appendix 2: Guidance for participant inclusion criteria and scope of practice.
4.3 Outline the importance of having the correct insurance cover for working with adults with long-term health conditions	• How to check insurance arrangements are sufficient. • Correct insurance requirements for working with adults with long-term health conditions. • Examples of when insurance cover may be insufficient (e.g. depending on qualifications held). • How to inform insurance companies of the specialist qualification and to include cover of this population under existing policy.

4.4 Outline the importance of holding a current and valid first aid certificate when working with adults with long-term health conditions	• Know how to respond in the event of accidents and/or emergencies.
	• Recognise signs and symptoms of adverse events.
	• Provide first aid:
	  ○ prevent deterioration
	  ○ preserve life
	  ○ promote recovery.

4.5 Explain the importance of regular continuous professional development (CPD) relevant to working with adults with long-term health conditions	• Maintaining professional competence and membership of organisations. • Keeping up to date with guidance and recommendations. • Best practice and working within scope of practice. • CPD opportunities to support work with this population, including specialist organisations and training providers. • Types of CPD – peer mentoring, clinical service supervision, online. • CPD related to communication and assertiveness, behaviour change, motivational interviewing, health policy, health conditions, palliative care. • Strategies for emotional resilience. • Importance of reflective practice.
4.6 Explain the role of exercise referral schemes in supporting	• History and overview of schemes including reference to any evidence (where available) to support effectiveness (e.g.

adults with long-term health conditions	evaluation reports available for National Exercise Referral Scheme in Wales).
	• Where and who schemes are typically delivered by (variable and depends on home country and location).
	• Primarily to support individuals with low to moderate risk health conditions to participate in structured and supported exercise.
	• Delivered for specified duration (variable and scheme dependent)
	• The processes and protocols where delegated responsibility is integrated in the delivery of services for people at high(er) risk of developing or living with LTCs.
	• With consideration to scheme set-up considerations:
	  ○ adhere to medico-legal requirements (as per National Quality Assurance Framework – NQAF, 2001)
	  ○ provide specified inclusion and exclusion criteria
	  ○ specific consultation and assessment protocols for assessing clients
	  ○ schemes are monitored and evaluated
	  ○ schemes are funded, so often reduced costs for established timeframe
	  ○ qualified instructors
	  ○ other personnel – managers, coordinators, administration staff
	  ○ clear roles and responsibilities
	  ○ key national and local care pathways supporting physical activity for individuals with specified health conditions (see credible information sources for various sources for specific conditions).
	• Brief overview and awareness raising of related health policy that impacts scheme development:
	  ○ relevant UK wide, national and local physical activity health inequalities
	  ○ health and social care policy for the promotion of physical activity, the prevention of inactivity and sedentary behaviour
	  ○ policy relating to the management of long-term conditions by use of physical activity
	  ○ local health strategies and needs assessments that influence the development of local services, including physical activity and sedentary behaviour

	○ the wider determinants of health, their impact on health inequalities and on an individual's health, and the use of health profiles to understand local demographics ○ importance and value of monitoring and evaluating service outcomes, including knowledge of key evaluation documents e.g. Public Health England (PHE) Standard Evaluation Framework and the Sport England Monitoring and Evaluation Framework ○ the various data methodologies e.g. qualitative, quantitative, customer feedback, process evaluation, impact and cost data and the instructor's role in the data collection process.
4.7 Explain the stages of the referral process.	• Self-referral pathways: ○ ensuring the needs of target population are taken into account, including safety considerations ○ relevant tools that determine level of risk of an adverse 'event' during exercise, e.g. PARQ+, PreCise tool, ACSM health screening or other relevant condition-specific tools ○ the Health Commitment Statement (an agreement <u>not</u> a risk stratification tool). • Referral from health services: ○ physiotherapists ○ GPs ○ practice nurses ○ dietitians. • Process outline: ○ individual visits health care professional who clinically assesses and transfers information ○ information is received and checked and individual signposted forwards (or backwards if incomplete records) ○ initial assessment of individual ○ individual accepted if within scope and meets inclusion criteria. • How to set-up an agreed self-referral and referral protocol (including inclusion and exclusion criteria) with local professionals and allied services.
4.8 Explain the difference between a referral, self-referral, a recommendation and signposting and role of	• Self-referral – a client gaining access to services by themselves and not involving a clinical referral. • Referral – the transfer of care for a patient from one clinician or clinic to another by request. • Social prescribing – sometimes referred to as community referral, is a means of enabling GPs, nurses and other

the instructor in relation to these	primary care professionals to refer people to a range of local, non-clinical services. • Signposting – a recommendation to another service (not a referral). • Informed consent does not need to be gained to signpost as no personal information is shared. • Informed consent is required for referrals where information is shared.

4.9 Explain health, safety and welfare requirements relevant to own working role, including safeguarding.	• The importance of health and safety:
	  ○ everyone has responsibility
	  ○ duty of care
	  ○ negligence and commission
	  ○ safety and wellbeing
	  ○ professionalism.
	• Relevant requirements and legislation:
	  ○ safeguarding
	  ○ risk assessment
	  ○ managing emergencies and emergency action plans
	  ○ reporting procedures – confidentiality, data protection
	  ○ first aid regulations and procedures
	  ○ reporting of injuries, diseases and dangerous occurrences regulations (RIDDOR).
	• Key principles for working with vulnerable adults:
	  ○ what is meant by safeguarding?
	  ○ the different types of abuse
	  ○ possible signs of abuse
	  ○ responsibilities and limitations.
	  ○ procedures to follow to protect oneself from accusations of abuse.
	• Organisational procedures and policies:
	  ○ disclosure and barring (DBS)
	  ○ safeguarding adults and adults at risk
	  ○ responsible person for managing safeguarding issues
	  ○ reporting procedures for safeguarding.
	• The statutory agencies responsible for safeguarding:
	  ○ when it may be necessary to contact statutory agencies
	  ○ how to maintain confidentiality of information relating to possible abuse.

4.10 Identify other working roles designed to support health and physical activity in the community	• Other roles may include:
	  ○ sport development officers
	  ○ exercise referral teams
	  ○ link workers
	  ○ health champions
	  ○ health coaches
	  ○ health trainers
	  ○ community activators.

Programming, adapting and delivering exercise for adults with long-term health conditions (J/651/1819)

Unit aim

To provide the knowledge and skills to programme, adapt and deliver exercise sessions and programmes for adults with long-term health conditions, within scope of practice.

Learners will know how to:

- consult with individuals and conduct appropriate health screening and assessment
- evaluate the potential risks and benefits of participation in exercise
- assess suitability of exercise for participants within scope of practice
- signpost participants to other professionals, where needed
- design, adapt and deliver safe and effective exercise sessions to meet the needs of individuals with long-term health conditions:
    - provide appropriate adaptations and tailoring to meet specific needs
    - monitor exercise safety and intensity
    - demonstrate effective communication and instructional skills
    - engage and fully support a range of participants.

Content

1. Understand how to screen and assess adults with long-term health conditions prior to participation in physical activity and exercise	

1.1 Explain the importance of appropriate consultation, pre-activity screening and assessment when working with adults with long-term health conditions	• Screening methods and risk stratification models:
	  ○ ACSM model – algorithm and current PAR-Q+ with follow-on questions and e-PARmed-X (as required)
	  ○ Irwin and Morgan Model
	  ○ verbal screening
	  ○ other screening tools for specific conditions (where available and as appropriate).
	• With consideration to:
	  ○ advantages and disadvantages of different methods/models
	  ○ evidence-base for use (validity and reliability of tools)

	• Use for:
	  ○ appropriate advice and guidance – deferral, signposting and referral
	  ○ working within scope of practice and role boundaries, competence, confidence and qualifications
	  ○ identifying suitability of sessions and identifying individuals who need specialist support (physiotherapy)
	  ○ determining session content
	  ○ supporting individuals with lifestyle behaviour change.

1.2 Describe appropriate consultation and communication skills to gather information from participants	• How to conduct a consultation – environment, timing, structure, etc.
	• The importance of rapport and relationship established between instructor and participant(s) during the consultation on engagement and adherence.
	• The importance of a person-centred empathetic approach that takes account of the wider determinants of health and the impact on an individual's ability to change their behaviour.
	• The use of motivational interviewing techniques – open questions, active listening, reflective statements, summaries.
	• Methods of gathering information:
	  ○ written questionnaires (PAR-Q+, e-PARmed-X and other questionnaires)
	  ○ informed consent
	  ○ referral and transfer information (where relevant)
	  ○ interviews and oral questions
	  ○ health assessments – blood pressure, heart rate, body mass index (BMI), waist circumference (as appropriate)
	  – when to use and when to exclude, e.g. too invasive
	  ○ medical information and medications – transferred by GP or other healthcare professional (HCP)
	  ○ observation and use of questions throughout session
	  ○ benefit of functional assessments, such as three-minute walk, sit to stand, timed up and go, single leg balance, functional reach, internal and external rotation, seated hamstring stretch. **NB: learners are not expected to conduct these assessments, just to have awareness of their value and uses. This information may be available from health care professionals and would be part of more specialist qualifications (e.g. postural stability instructor)**
	  ○ verbal screening at start of every session:

	– health and wellbeing checks – changes to health status or any medications ○ other questionnaires that can be useful to identify needs: ▪ EQ-5D – to assess overall wellbeing (see appendix for sources) ▪ Specific to conditions (e.g. Oswestry, PHQ-9). • Appropriateness of methods with consideration to client's needs: ○ deaf or partial hearing ○ blind or partial sighted ○ physical disability ○ speakers of other languages ○ neurodiversity (ADHD, dyspraxia, etc.). • Uses of information: ○ to assist risk stratification ○ to identify reasons for referral/signposting ○ to inform planning, delivery and instruction skills.
1.3 Summarise the information that should be obtained when consulting with and pre-screening adults with long-term health conditions prior to physical activity and exercise	• Information: ○ personal information – age, gender, etc. ○ medical and surgical history and medications ○ physical activity history and preferences, current fitness ○ lifestyle behaviours ○ motivation and barriers ○ readiness to make changes and goals ○ health and physical assessments (where appropriate) ○ medications and awareness of their side effects, including effects that may impact exercise response, e.g. blood pressure, balance, energy levels, etc.
1.4 Explain when to signpost or refer participants to other healthcare professionals prior to participation in exercise sessions	• When written consent should be sought from healthcare providers: ○ positive response to PAR-Q+ and follow-on questions, including completion of e-PARmed-X ○ to gather more information about participants, such as outcomes of any functional or other assessments completed by a health care professional.

	• Risk stratification beyond scope of practice and qualifications:
	  ○ level of risk and needs identified exceed professional competence/qualifications and type of session being offered.
	• Issues outside of scope such as:
	  ○ medical
	  ○ nutritional
	  ○ psychological
	  ○ risk stratification
	  ○ contraindications.
	• The importance of participant consent before exchanging information with other professionals.
	• Other professionals to include:
	  ○ GP
	  ○ counsellor
	  ○ dietician
	  ○ smoking cessation
	  ○ other instructors.

1.5 Outline potential goals of adults with long-term health conditions and the importance of regular participation in physical activity and exercise to support these goals	• Specificity and diversity of goals:
	  ○ medical management and physiological
	  ○ general health and fitness and lifestyle
	  ○ psychological and social
	  ○ psychological
	  ○ functional ability.
	• The importance of person-centred goal setting.
	• Process, behavioural and outcome goals.
	• How goals can support motivation.
	• The effect of goals on session and programme planning and delivery.
	• Reviewing and checking goals and monitoring progress.
	• Awareness and overview of when to involve others in goal setting:
	  ○ to maintain scope of practice and role boundaries
	  ○ issues outside of scope:
	  – medical
	  – nutritional

	– psychological – risk stratification – contraindications. ○ other professionals to include: – GP – health trainers – counsellor – dietician – smoking cessation – other instructors • The importance of regular participation in physical activity and exercise to support achievement of goals: ○ physical activity – CMO guidance: – activities of daily living and messages: ▪ sit down less and move more often ▪ some is good, more is better ▪ break up sedentary times ○ structured exercise: – frequency, intensity, time, type, volume and progressions (FITT-VP) – evidence-based recommendations – linked home-based exercise programmes.
1.6 Describe how to record and store information	• Procedures for collecting, storing and sharing personal and sensitive data that includes medical information. • With consideration to: ○ principles of confidentiality and data protection ○ General Data Protection Regulations (GDPR) ○ Data Protection Act (2018) ○ the use and value of appropriate electronic data management systems (including local customer relationship management – CRM system, where available): – to keep service user records up to date and use this to manage behaviour change and tailor follow up motivational support according to individual needs – to aid data collection, evaluation and support to individual participants

2. Understand how to plan and adapt exercise for adults with long-term health conditions	

2.1 Describe planning considerations for delivering exercise sessions for adults with long-term health conditions	• Consideration to, and/or use of local clinical governance guidelines when delivering physical activity for people at risk of, or living with, an LTC.
	• Participants:
	  ○ screening and informed consent
	  ○ appropriate clothing and footwear
	  ○ hydration
	  ○ functional limitations and impairments
	  ○ chronic health conditions
	  ○ medications and effects.
	• Environment:
	  ○ type of environment, e.g. studio, gym, home-based, etc.
	  ○ temperature, space, floor surface, room layout.
	• Equipment:
	  ○ suitability of different equipment for:
	  – specific populations
	  – specific types of session
	  ○ maintenance of equipment
	  ○ lifting and handling
	  ○ types of equipment:
	  – small portable equipment – resistance bands, chairs, hand weights/dumbbells, ankle weights, steps
	  – fixed equipment – gym-based (CV machines, RT machines).

2.2 Describe how to assess and manage the risks in the exercise environment	• Screening and risk stratification of participants:
	  ○ exercise recommendations and modifications
	  ○ referral or deferral as needed.
	• Effects of chronic health conditions – see unit 1.
	• Effects of specific medication(s) – see unit 1.
	• Risk assessment of environment and equipment:
	  ○ layout of environment
	  ○ equipment used and layout
	  ○ including environments not designed for exercise (e.g. individual's home).

	• Checks needed:
	  ○ prior to physical activity
	  ○ during physical activity – dynamic risk assessment, observation
	  ○ post physical activity.

2.3 Describe how the effects of long-term health conditions on the body systems may have implications for planning and delivering exercise	• All identified effects and risks – see unit 1.
	• Motor skills – balance, coordination, reaction time to instruction and cues.
	• Pelvic floor – inclusion of specific exercises to target this area.
	• Transitions:
	  ○ between movements
	  ○ from standing to floor and floor to standing and individual's ability and confidence to transition
	  ○ planning and allowing time for transitions
	  ○ clearer instructions to manage transitions
	  ○ use of teaching position to manage transitions.
	• Slower movement speed (including music speed, where appropriate)
	• Intensity variables – repetitions, resistance, range of motion, rate/speed, sets
	• Modifications for functional impairments:
	  ○ joint and mobility
	  ○ cognitive
	  ○ cardiovascular
	  ○ sensory – vision and hearing.

2.4 Explain how to apply knowledge of physical activity, ageing and disease processes to design and deliver a safe and effective physical activity programme	With consideration to changes to the body systems relevant to specific health conditions (progressive and over time) include: • skeletal – i.e. bone density, joint mobility, range of motion (ROM), alignment and posture • neuromuscular – i.e. posture, pelvic floor, power, strength, endurance, sarcopenia, heat production, immune function, fine motor control, coordination, balance and falls risk, reaction time (including ability to respond to instructions), movement speed, sight and hearing, short term memory • cardiovascular – i.e. reduced anaerobic threshold, reduced exercise tolerance and ability to sustain activity • respiratory - i.e. breathlessness • cognitive – short-term memory

	• psychosocial – i.e. low mood, low energy, loss of interest in life.

2.4 Describe a safe and effective session structure and appropriate activities for specific long-term health conditions	Session structure considerations, such as:
	• warm-up
	• cardiovascular
	• muscular
	• cooldown and stretch.
	Activities/exercises:
	• Evidence-based guidelines appropriate to condition.
	• All components of fitness:
	  ○ cardiovascular fitness
	  ○ muscular fitness – functional, for bone density, posture and pelvic floor
	  ○ flexibility
	  ○ motor skills, e.g. balance, coordination, reaction time, speed, etc.
	  ○ relaxation.
	• Activities of daily living (ADL):
	  ○ move more often and sit down less.
	Types of session
	• 1:1 – sessions and programmes
	• group-settings – sessions and programmes.

2.5 Describe the structure, intensity and exercise selection for a safe and effective warm-up	• For clients with specific long-term health conditions and according to needs. • Warm-up – longer duration, more progressive and gradual increase of intensity, more targeted and isolated joint mobility for specific joints (e.g. where appropriate), lower intensity and impact, transitions and speed manageable. • Content appropriate to exercise genre.
2.6 Describe the structure, intensity and exercise selection for safe and effective cardiovascular training	• For clients with specific long-term health conditions and according to needs. • Cardiovascular – lower impact, less intense, progressive and gradual build up and cooldown, interval approaches, during peak slower pace and less complex and less arm movements (if included) and less complex transitions. • Content appropriate to exercise genre.

2.7 Describe the structure, intensity and exercise selection for safe and effective muscular fitness training	• For clients with specific long-term health conditions and according to needs. • Muscular – whole body approach, functional focus and related to daily activities, fracture site focus (osteoporosis), full range of motion and of sufficient intensity to be effective, avoidance of isometric exercises. • Content appropriate to exercise genre.
2.8 Describe the structure, intensity and exercise selection for a safe and effective cooldown	• For clients with specific long-term health conditions and according to needs. • Cooldown and stretch – stretch positions appropriate, support and balance available (walls, chairs), use of aids to assist range of motion or comfort (pillows, cushions). • Content appropriate to exercise genre.

2.9 Explain the benefits and limitations of different methods of monitoring exercise	• The role of evidence-based technologies that support the uptake and maintenance of physical activity.
	• Relevant methods of monitoring an individual or group of participants both before, during and after exercise:
	  ○ rate of perceived exertion – RPE
	  ○ talk test
	  ○ breathlessness scales
	  ○ heart rates
	  ○ observation
	  ○ questioning
	  ○ blood sugar level checks for individuals with diabetes.

2.10 Identify a range of modifications, adaptations and progressions that may be applied to ensure the exercise session and programme is accessible and inclusive to adults with long-term health conditions	• Modification, adaptation and progression of:
	  ○ frequency, intensity, time, and type
	  ○ intensity variables (to affect modification) and prioritisation of them for increasing/decreasing intensity and/or functional movement:
	  – range of motion
	  – repetitions
	  – resistance
	  – rate or speed of movement
	  – impact
	  – exercise positions and start positions
	  ○ weight-bearing
	  ○ balance and level of support

	○ music speed – appropriateness of speed and when not appropriate. • Adaptations according to specific condition and level of decline (as appropriate): ○ joint impairments – shoulder, hip, spine, finger, toes, knees, wrist – pain, reduced range of motion (ROM), stiffness, lack of strength, alignment and posture ○ cardiorespiratory – reduced tolerance and capacity, lower muscle mass, breathlessness ○ sensory impairment – visual, vestibular, hearing, proprioception ○ cognitive/mental – mild dementia, low mood, mild depression/anxiety, decline in cognitive ability, short-term memory, decline in ability to follow instructions safely, decline in ability to sequence tasks.
2.11 Analyse the suitability of a range of alternative types of activity to meet the diverse needs and requirements of adults with long-term health conditions	• Types of activity and who they may be suitable or unsuitable for: ○ walking programmes (including the risk assessment of some outdoor environments, e.g. uneven walking surface may increase risk of falls) ○ chair-based exercise ○ water-based exercise ○ Tai Chi ○ yoga ○ Pilates ○ specialist sessions: – exercise referral – cardiac rehabilitation sessions – pulmonary rehabilitation – strength and balance (postural stability instructor). • When to recommend these alternatives: ○ to maintain scope of practice and competence ○ safety and effectiveness for individuals. • When to regress physical activities. • Components of fitness trained or not trained by specific exercise modalities and how to advise participants.

3. Understand how to deliver and review exercise for adults with long-term health conditions	

3.1 Describe how to utilise and adapt communication and instructional skills to monitor and improve performance	• Adaptation according to individual needs and health condition.
	• The importance of correct technique during physical activity and exercise.
	• Instructor skills:
	  ○ accurate own demonstration, including movement speed and posture
	  ○ clarity of instruction and cues to support transitions between exercises:
	  – visual cues
	  – verbal cues and use of body language
	  – use of voice – volume, intonation, projection, enunciation
	  – step-by- step instructions
	  ○ timing:
	  – planning time for transitions
	  – time to get into and out of position
	  – set up of start positions
	  – time to set up equipment, e.g. use of resistance bands
	  ○ observation and use of effective teaching position
	  ○ presentation – including clothing, footwear.
	• The importance of rapport and relationship established between instructor and participants on engagement and adherence.

3.2 Explain the importance of correct instructions and demonstration of safe and effective exercise technique	• To ensure safe and effective participation.

3.3 Describe how to tailor delivery method to meet the needs of a range of participants	• Adaptation of verbal and instruction methods.
	• With consideration to learning styles and specific needs, such as:
	  ○ deaf or partial hearing
	  ○ blind or partial sighted
	  ○ physical disability

	○ speakers of other languages ○ neurodiversity (ADHD, dyspraxia, etc.)
3.4 Describe effective motivational strategies and techniques to support participants to adhere to physical activity and support lifestyle behaviour(s) change	• Consideration to behaviour change models: ○ transtheoretical model (stages and processes) ○ self-efficacy ○ COM-B (capability, opportunity, motivation, behaviour) ○ self-determination theory ○ health belief model ○ biopsychosocial model. • Effective motivational strategies and techniques that can be used to support an individual: ○ techniques: – motivational interviewing (OARs and change/sustain talk) – solution focused – cognitive behavioural therapy (CBT) ○ strategies: – awareness of self-talk – awareness of antecedents and behaviour triggers – goal setting and use of rewards – social support systems – education and learning – role models – peer support.
3.5 Outline how to apply relevant behaviour change theory and techniques to design a programme to meet the needs of individuals	• See 3.4. • At different stages of intervention: – consultation – delivery – review points.
3.6 Explain the importance of regular reviews of the participant's progress	• To confirm continued suitability of sessions and programme – safety and effectiveness. • Awareness of need for progression and regression. • To inform health professionals/commissioners.

	• To evidence statistics and outcomes to gain access to bursaries/grants.
3.7 Identify opportunities to collect feedback from participants	• Before, during and after sessions. • Information needed – extent to which session met needs, individuals found it difficult or easy, etc. • Methods – verbal, written, reassessment.

3.8 Explain how to use the information gathered from participant feedback to promote motivation, adherence and outcome success	• Review and adapt exercise programmes and behavioural strategies based on individual's biopsychosocial needs and with consideration to:
	  ○ safety
	  ○ motivation levels
	  ○ medical information
	  ○ personal motivations and preferences.
	• For example, comparing reports of subjective experiences with outcomes of any functional assessment outcomes/reviews to show progress and developments.

3.9 Explain how to reflect on your own practice to inform future sessions	• Kolb Model. • Importance of reflective practice. • Reflection on action and in action. • Use of reflective practice to identify CPD needs.

4. Be able to collect and use information to plan and adapt exercise for adults with long-term health conditions	

4.1 Use appropriate methods to collect and record information from participants	• Use of:
	  ○ clinical information shared by a health care referral:
	  – how to interpret this
	  – when and how to refer back to referring practitioners
	  ○ written (PAR-Q+/e-PARmed-X) and verbal screening
	  ○ relevant assessment(s), and risk stratification:
	  – signposting, referral, or deferral – as appropriate
	  – adaptation of session or content
	  – progression and regression of session content.
	• Different ways to collect information and consult with individuals in different ways:
	  ○ how to develop rapport via face to face, telephone, remote, online approaches, etc.
	  ○ use a person-centred approach
	  ○ integrate the use of behaviour change models and motivational techniques
	  ○ the pros and cons of different methodologies, the evidence for these and impact on practice in selection and use and understand how to use within a person-centred behaviour change approach.
	• Readiness of individual to change lifestyle behaviours (motivation, confidence, stage of behaviour change) all of which will dictate the amount of support needed and prioritisation in session.
	• When assessments are used:
	  ○ educate client on purpose and value
	  ○ select assessments appropriate to the individuals
	  ○ advise individuals of correct procedures, protocols and risks prior to commencing any physical assessment(s)
	  ○ gain informed consent prior to completion of any assessment
	  ○ supervise assessments in a safe and effective manner
	  ○ carry out assessments at an appropriate point in a behaviour change intervention, in an empathetic and non-judgemental style

	○ **ensure** safety of client and professionalism is maintained at all times: – correct procedures, protocols – the presence of a chaperone, if necessary – informed consent – duty of care – cultural sensitivities.
4.2 Analyse and use information gathered to design a safe and effective exercise session for adults with specific long-term health conditions	• Interpret and use the results of information gathered to: ○ establish a base line from which to monitor and review progress and outcomes and adapt programmes at regular intervals as appropriate ○ make appropriate lifestyle recommendations (within scope) ○ signpost individuals with needs that exceed scope ○ design exercise programmes based on individual's biopsychosocial needs and with consideration to: – clinical information and needs – safety – motivation levels – medical information – personal motivations and preferences ○ safe and effective session structure: – warm-up – cardiovascular exercises – muscular fitness exercises – cooldown and flexibility exercises – relaxation – with consideration to: ▪ motor skills, including balance, coordination ▪ functional considerations – ability and confidence to transition ▪ recommendations for other activities – activities of daily living, home-based exercise, other exercise sessions appropriate to needs. • Application of progressive principles and variables (FITT-VP) .

4.3 Apply relevant behaviour change theory and techniques to design a programme to meet the personal needs of individuals	• See 3.4 and 3.5.
	• Application of principles from relevant behaviour change models:
	  ○ transtheoretical model (stages and processes)
	  ○ self-efficacy
	  ○ COM-B (capability, opportunity, motivation, behaviour)
	  ○ self-determination theory
	  ○ health belief model
	  ○ biopsychosocial model

4.4 Plan a safe and effective warm-up component	• Intensity, duration and selection of exercises to meet the needs of participants. • Content appropriate to exercise genre.
4.5 Plan a safe and effective main component	• Intensity, duration and selection of exercises to meet the needs of participants. • Content appropriate to exercise genre.
4.6 Plan a safe and effective cooldown and stretch component	• Intensity, duration and selection of exercises to meet the needs of participants. • Content appropriate to exercise genre.
4.7 Assess and manage risks in the exercise environment	• Individual risks – conditions, side effects of medications, reliever medications available (respiratory conditions), carbohydrate snacks available (diabetes), etc. • Environment risks – temperature, etc. • Equipment risks – safe lifting and moving. • Management of risks (eliminate, reduce, isolate, control) and contingency plans.
4.8 Provide a rationale for the session structure and activities used in the session/programme	• Purpose of session. • Reasons for activities selected according to participant(s) needs. • Reasons for the exclusion of any components, related to genre delivered and advice that would be provided to participants regarding training other components.

4.9 Plan a range of adaptations, modifications and progressions for the exercise programme specific to participants' needs	• Consider that health conditions and individual health status can change over-time.
	• Application of FITT-VP principles:
	  ○ frequency
	  ○ intensity:
	  – repetitions

	– rate/speed – resistance – rest – range of movement ○ time: – whole session – components ○ type: – modify or change exercise modality or exercises – impact and weightbearing changes ○ volume – dose-response ○ progression – according to individual needs. • Different training approaches for component of fitness and exercise discipline (appropriate to type of session and genre planned): ○ cardiovascular: continuous, intervals, etc. ○ resistance: circuit, single sets, multiple sets, etc. ○ flexibility: assisted, dynamic, static (modified and adapted). • Advice to provide to individuals for sessions where certain components of fitness are not trained.
4.10 Record the session and programme in an appropriate format	• For assessment use records provided in Learner Assessment Record (LAR). • The importance of accurate records when working with individuals with long-term health conditions. • Use of appropriate screening records, risk assessment. • Use of appropriate planning records – lesson plan and progressive plan. • Records to be maintained for: ○ monitoring and reporting purposes (as appropriate) ○ protection in the event of litigation. • Records to align with GDPR and data protection guidelines: ○ essential information ○ confidentiality ○ clear and structured ○ appropriate format ○ appropriate storage and transfer

5. Be able to deliver and review exercise sessions and programmes for adults with long-term health conditions	
5.1 Pre-screen participants prior to participation to check readiness to participate	• See 3.1 and 3.3.
5.2 Assess, monitor and manage risk to participants throughout the programme	• See 3.2.
5.3 Deliver a safe and effective warm-up component	• Use of appropriate instructional skills. • Intensity, duration and selection of exercises to meet the needs of participants.
5.4 Deliver a safe and effective main component	• Use of appropriate instructional skills. • Intensity, duration and selection of exercises to meet the needs of participants.
5.5 Deliver a safe and effective cooldown and stretch component	• Use of appropriate instructional skills. • Intensity, duration and selection of exercises to meet the needs of participants.
5.6 Use appropriate methods of monitoring exercise safety and intensity	• Methods of monitoring exercise safety and intensity appropriate to health conditions and effects of medication on the exercise response: ○ observation ○ questions and answer ○ heart rate ○ rating of perceived exertion (RPE) ○ talk test.
5.7 Observe and correct participants' exercise technique to ensure safe and effective alignment and use of equipment where appropriate	• Change of teaching position. • Use of eye contact. • Use of specific teaching points .

5.8 Use effective communication and instructional skills and a person-centred and empathic approach to deliver the session	• Adopt a person-centred empathetic approach that takes account of the wider determinants of health and the impact on an individual's ability to change their behaviour.
	• Application of all the following with consideration to the individual's physical, psychological and behavioural needs:
	  ○ visual and verbal communication skills
	  ○ teaching points
	  ○ demonstrations
	  ○ explanations
	  ○ teaching position
	  ○ alternatives
	  ○ observation and correction
	  ○ motivational strategies.
	• Adaptation of different methods of communication for specific conditions/clients (as required).

5.9 Provide client specific instructing points, feedback and reinforcement in a friendly, professional manner	• Based on participant's performance and specific needs.
5.10 Adapt and tailor delivery method, session structure and activities to meet the needs of all participants	• Regressions of exercises, as appropriate. • Progressions of exercises, as appropriate. • Change of teaching position to improve observation. • Modification of instruction skill.
5.11 Provide adaptations, alternatives and progressions to meet individual needs (as required)	• As required to support participants,
5.12 Use effective motivational strategies and techniques to support participants to adhere to physical activity and support lifestyle behaviour(s) change	• Verbal and visual. • General and specific to individuals. • Praise. • Encouragement.

5.13 Evaluate the effectiveness of the session and programme to ensure it is engaging, varied and progressive to participants' needs/goals	• Regular review dates. • Use of participant feedback and self-reflection. • Things that went well – session content and delivery. • Things to change or improve – session content and delivery.
5.14 Use information gathered from participant feedback to promote motivation, adherence and outcome success	• Measures of success may include: – long-term adherence – changes to activity behaviour – subjective measures, such as improved mood and energy levels.
5.15 Use information gathered from participant feedback and self-reflection to inform own continuing professional development	• How to improve own practice. • The value of reflective practice. • Relevant continuing professional development (CPD)

Appendix 1: Information sources

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

Information sources and organisations

- Age UK: https://www.ageuk.org.uk/
- Age Concern: https://www.ageisjustanumber.org.uk/services/
- American College of Sports Medicine (ACSM): https://www.acsm.org/
- American Diabetes Society (ADA): https://www.diabetes.org.uk/
- British Geriatric Society: https://www.bgs.org.uk/
- Association for Nutrition (AfN): https://www.associationfornutrition.org/
- Asthma UK: https://www.asthmaandlung.org.uk/
- Arthritis action: https://www.arthritisaction.org.uk
- Blood pressure UK: https://www.bloodpressureuk.org/
- British Association of Cardiovascular Prevention and Rehabilitation (BACPR): https://www.bacpr.org/
- British Journal of Sports Medicine: https://bjsm.bmj.com/.
- British Medical Journal (BMJ): https://www.bmj.com/
- British Heart Foundation (BHF): https://www.bhf.org.uk/
- British Geriatric Society: www.bgs.org.uk/.
- Blood Pressure Association: www.bpassoc.org.uk/
- British Association of Sports and Exercise Science (BASES): https://www.bases.org.uk/
- British Lung Society: https://www.lunguk.org/
- British National Formulary (BNF): https://about.medicinescomplete.com/#/
- British Nutrition Foundation: https://www.nutrition.org.uk/
- Centre for behaviour change: https://www.ucl.ac.uk/behaviour-change/
- Centre for ageing better: https://ageing-better.org.uk/ageing-population
- Chartered Institute for the Management of Sport and Physical Activity (CIMSPA): https://www.cimspa.co.uk/
- Diabetes Education and Self-Management for Ongoing and Newly Diagnosed (Desmond) https://www.desmond.nhs.uk/
- Diabetes UK: https://www.diabetes.org.uk/
- Dose Adjustment for Normal Eating (Dafne): https://dafne.nhs.uk/
- e-PARmed-X + screening tool: https://eparmedx.com/

- EQ-5D assessments: https://euroqol.org/eq-5d-instruments/
- Health and Safety Executive (HSE): https://www.hse.gov.uk/
- Journal of Public Health: https://academic.oup.com/jpubhealth
- Later Life Training: laterlifetraining.co.uk/.
- Map of medicine: https://mapofmedicine.com/
- Mental Health Foundation: https://www.mentalhealth.org.uk/
- MIMS: https://www.mims.co.uk/drugs
- MIND: https://www.mind.org.uk/
- Motivational Interviewing: https://motivationalinterviewing.org/understanding-motivational-interviewing
- MS Society: https://www.mssociety.org.uk/about-ms/what-is-ms
- National Library of Medicine: https://pubmed.ncbi.nlm.nih.gov/
- National Rheumatoid Arthritis Society: https://nras.org.uk/
- National Institute of Mental Health (NIMH): www.nimh.nih.gov
- National Institute of Health and Care Excellence (NICE): https://www.nice.org.uk/
- NHS Choices: https://www.nhs.uk/
- National Institute of Health and Care Excellence (NICE): www.nice.org.uk/.
- National Library of Medicine: pubmed.ncbi.nlm.nih.gov/.
- PAR-Q+: https://eparmedx.com/
- Parkinson's UK: https://www.parkinsons.org.uk/information-and-support/what-parkinsons
- Patient UK: https://patient.info/
- Psychology of Sport and Exercise: https://www.sciencedirect.com/journal/psychology-of-sport-and-exercise
- Research Quarterly for Exercise and Sport: https://www.tandfonline.com/toc/urqe20/current
- Royal Osteoporosis Society: https://theros.org.uk/
- Sport England: https://www.sportengland.org/
- Sport England Market Segmentation: https://segments.sportengland.org/
- Scottish Intercollegiate Guidelines Network (SIGN): https://www.sign.ac.uk/
- The King's Fund. https://www.kingsfund.org.uk
- UK Active: https://www.ukactive.com/.
- World Health Organisation: https://www.who.int/

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Appendix 2: Guidance for participant inclusion criteria and scope of practice

The following screening tools can be used as a **guide** to help identify individuals whose needs are within scope of practice.

Using ACSM algorithm

- Inactive individuals with:
  - no CV, metabolic or renal disease – no medical clearance needed
  - no signs and symptoms of CV, metabolic or renal disease – no medical clearance needed
  - known CV, metabolic or renal disease (asymptomatic) – medical clearance recommended
  - signs and symptoms of CV, metabolic or renal disease – medical clearance recommended.
- Active individuals with:
  - no CV, metabolic or renal disease – no medical clearance needed
  - no signs and symptoms of CV, metabolic or renal disease – no medical clearance needed
  - known CV, metabolic or renal disease (asymptomatic) – medical clearance not needed for moderate intensity activity
  - signs and symptoms of CV, metabolic or renal disease – seek medical clearance.

NB: Medical clearance being provided does not mean an individual's needs are within your scope of practice unless additional qualifications are held.

Using PAR-Q+ and ePARmed-X

- 'No' response to PAR-Q+ – no medical clearance needed.
- 'Yes' response to PAR-Q+ but 'no' response to follow on questions – no medical clearance needed but participants may require significant modification to some activities (intensity, type, duration).
- 'Yes' response to PAR-Q+ and 'yes' response to follow on questions – completion of e-PARmed-X recommended available at www.eparmedx.com and medical clearance may be needed.

Using Irwin and Morgan

- Low to moderate risk stratification.

Appendix 3: Conditions within scope of practice for this qualification

These are offered as a guide for inclusion and exclusion criteria. Learners are required to undertake risk stratification to assess the suitability of exercise for client needs.

* **NB: If other CVD risk factors exist, or multiple health conditions are present, risk stratification will increase and may exceed scope.**

Condition	Inclusion criteria.
Hypertension	Stable and controlled*
Hypercholesterolaemia	Stable and controlled*
Hyperlipidaemia	Stable and controlled *
Hypothyroidism	Stable and controlled *
Hyperthyroidism	Stable and controlled *
Coronary heart disease	Post-phase IV rehabilitation. No new referrals. CVD risk factors in moderate category. No MI.
Peripheral vascular disease	Without other complications
Diabetes type 1 and 2	Stable and controlled with no complications * *HCP to advise on modification of insulin prior to exercise (if insulin dependent)*
Obesity	Body Mass Index (BMI) 30 - <40 *
Chronic obstructive pulmonary disease (COPD)	Mild/moderate only *
Asthma	Stable and well controlled
Osteoarthritis	Level 1 and 2 only
Rheumatoid arthritis	Early stage and moderate only. Not in flare up.
Osteopenia	
Osteoporosis	Early stage and moderate. No fracture history.

Condition	Inclusion criteria.
	No falls risk.
Low back pain	Non-specific only. No red flags. Yellow (psychological) flags may require signposting to pain management.
Joint replacement	Post-rehabilitation/physiotherapy.
Depression	Less severe (mild to moderate only).
Stress	
General anxiety disorder (GAD)	Less severe (mild to moderate).

Please note:

- When multiple health conditions are present, this may increase risk stratification of individuals.
- Individuals with higher or high-risk stratification are outside of scope of practice for this qualification.
- Medical clearance does not mean that all types of exercise are appropriate.
- Instructors should use a range of risk stratification tools to assess level of risk and make informed decisions regarding the specificity of risk, (cardiac incident, fall, fracture, sprain, hypoglycaemia, etc.), severity and likelihood of risk and professional scope of practice.

Exclusions – low back pain (red flags)

- non-mechanical pain, e.g. nerve root pain
- thoracic pain
- fever and unexplained weight loss
- bladder or bowel dysfunction
- history of carcinoma (cancer)
- ill-health or presence of other illness
- HIV
- progressive neurological deficit
- disturbed gait or saddle anaesthesia (cauda equina)
- age of onset 55 years.

Exclusions – absolute contraindications (exercise referral toolkit 2010)

- BMI < 18.5 or > 40kg/m2
- symptomatic severe aortic stenosis

- acute pulmonary embolus or pulmonary infarction
- acute myocarditis or pericarditis
- suspected or known dissecting aneurysm
- active retinal haemorrhage
- 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
- significant drop in BP during exercise
- uncontrolled resting tachycardia ≥ 100 bpm.
- febrile illness
- experience's pain, dizziness or excessive breathlessness during exertion
- unstable/uncontrolled diabetes
- unstable/uncontrolled cardiac disease
- severe rheumatoid and osteoarthritis
- any other unstable, uncontrolled condition
- any conditions not covered in this qualification.

Guidance for training providers

Centre and qualification approval

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

Find out more on our website:

ymcaawards.co.uk/approvals

Tutor, assessor and IQA requirements

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

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

Find out more on our website:

ymcaawards.co.uk/approvals/staff-approval

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