VTCT Level 2 Certificate in Fitness Instructing - Water-Based Exercise (QCF)

Approved by SkillsActive

VTCT code: AF20093

Accreditation number: 500/8722/8

Accreditation details

Accreditation start date: 01/04/2010

Accreditation end date: 31/12/2013

Certification end date: 31/12/2015

Guided learning hours (GLH): 162

GLH is an estimate of the time allocated to:

- *direct teaching*
- *instruction and formative (ongoing) assessment*
- *directed assignments or research*
- *supported individual study*

Learner initiated private study or preparation and marking of formative assessment is not taken in to account.

Credit value: 25

Qualification details

Introduction

The VTCT Level 2 Certificate in Fitness Instructing - Water-Based Exercise (QCF) has been designed to provide learners with the requisite knowledge, understanding and skills to work unsupervised as an exercise to music instructor (water-based) with apparently healthy adults of all ages.

In this qualification learners will develop their knowledge and understanding of the theory underpinning water-based exercise, including anatomy and physiology, principles of exercise and fitness, how to support clients, health and safety, and the theoretical components of water-based exercise. It will also develop the skills and techniques to plan, prepare, teach, adapt, deliver and review water-based exercise sessions and programmes.

Mapped to National Occupational Standards (NOS)

This qualification has been mapped to the National Occupational Standards (NOS) for Instructing Physical Activity and Exercise (2009) and is accredited at Level 2 on the Qualifications and Credit Framework (QCF).

Progression

This qualification is recognised as an approved qualification for entry on to the Register of Exercise Professionals (REPs) at Level 2. Learners who successfully complete this programme will be equipped to work as an exercise to music instructor specialising in the context of water-based exercise throughout the sport and active leisure industry.

The VTCT Level 2 Certificate in Fitness Instructing - Water-Based Exercise (QCF) provides progression opportunities to the following VTCT qualifications:

- VTCT Level 3 Certificate in Personal Training (QCF)
- VTCT Level 3 Diploma in Mat Pilates (QCF)
- VTCT Level 3 Award in Adapting Physical Activity for Older Adults (QCF)
- VTCT Level 3 Award in Adapting Physical Activity for Disabled Clients (QCF)
- VTCT Level 3 Award in Adapting Physical Activity for Antenatal and Postnatal Clients (QCF)
- VTCT Level 3 Award in Sport Specific Conditioning (QCF)

Units in the qualification

To achieve the Level 2 Certificate in Fitness Instructing - Water-Based Exercise (QCF) all of the following mandatory units must be passed:

VTCT code	Ofqual reference	Unit title	Credit value	Guided learning hours (GLH)
UV20522	H/600/9013	Anatomy and physiology for exercise and health	6	41
UV20525	A/600/9017	Principles of exercise, fitness and health	4	28
UV20523	M/600/9015	Know how to support clients who take part in exercise and physical activity	2	13
UV20524	T/600/9016	Health, safety and welfare in a fitness environment	2	16
UV20528	L/600/9023	Planning water-based exercise	5	26
UV20529	R/600/9024	Instructing water-based exercise	6	38

Centre guidance

Motivating, engaging and exciting learners

Tutors and assessors are encouraged to develop exciting and innovative ways of delivering this qualification. Learners will be more likely to become involved and enthused and find it easier to achieve all the learning outcomes if they find the process of learning motivating, engaging and exciting. Learners will be expected to demonstrate knowledge and understanding of all learning outcomes for each unit. It is essential that the learner is provided with the opportunity to cover these in an interesting and motivating way.

Tutors and assessors requirements

In order to ensure that learners gain the most out of this unit, it is recommended that teaching is complemented by instruction from other personnel, such as industry specialists with relevant sector experience and practicing work-based assessors with appropriate practical experience and evidence of relevant professional development.

Tutors must:

- hold a discipline specific qualification equivalent to the level 2 water-based exercise
- have knowledge of and a commitment to the Exercise and Fitness Code of Ethical Practice;
- demonstrate active involvement in a process of industry relevant CPD during the last two years;
- be registered with the Register of Exercise Professionals (REPs) at Level 2.

Assessors must:

- hold or be working towards either a vocational assessing award or A1 (previously D32, D33), and have extensive industry experience or knowledge.

Internal verifiers must:

- hold or be working towards either a vocational internal verification award or V1 (previously D34).

Equipment requirements

The organisation delivering this qualification must have access to an appropriate practical facility with up to date equipment and an appropriate pool area.

Prerequisites

Learners aged 16+ are eligible for assessment.

There are no pre-requisites to access the VTCT Level 2 Certificate in Fitness Instructing - Water-Based Exercise (QCF**).**

Guidance on assessment

This book contains the units that make up the full qualification. Where indicated, VTCT will provide assessment materials. Assessment may be internal or external and the method of assessment is indicated in each unit.

Internal assessment
(Any requirement will be shown on the unit)
Assessment is set, marked and internally verified by the centre to clearly demonstrate achievement of the learning outcomes. Assessment is sampled by VTCT external verifiers.

External / independent assessment
(Any requirement will be shown on the unit)
External assessment is set and marked by VTCT. Independent assessment is set by VTCT, marked in the centre, and sampled by VTCT external verifiers.

Assessors and internal verifiers MUST sign off, where applicable:

1) ***each individual assessment criteria;***
2) ***record of assessment unit records located at the end of this book once <u>all</u> assessment criteria have been achieved for a unit.***

All sections that must be completed are shaded. All shaded sections must be completed before applying for certification.

Assessment explained
VTCT courses are assessed and verified by centre staff. Work will be set to improve the learner's practical skills, knowledge and understanding. For practical elements, the learner will be observed by the assessor. All work must be collected in a portfolio of evidence and cross-referenced to requirements listed in this Record of Assessment Book.

The centre will have an internal verifier whose role is to check that the assessment and evidence is valid and reliable and meets VTCT and regulatory requirements.

An external verifier, appointed by VTCT, will visit the centre to sample and quality-check the assessments, internal verification process and the evidence. The learner may be asked to attend on a different day from usual if requested by the external verifier.

This Record of Assessment Book is the learner's property and must be in their possession when they are being assessed or verified. It must be kept safe. In some cases the centre will be required to keep it in a secure place. The book will be completed by the learner and the course assessor to show achievement of all learning outcomes and assessment criteria.

Creating a portfolio of evidence
As part of this qualification the learner is required to produce a portfolio of evidence. A portfolio will confirm the knowledge, understanding and skills that have been learned. It may be in electronic or paper format.

The assessor will provide guidance on how to prepare the portfolio of evidence and how to show practical achievement and understanding of the knowledge required to successfully complete the qualification. It is this booklet along with the portfolio of evidence that will serve as the prime source of evidence for this qualification.

Evidence in the portfolio may take the following forms:

1. observed work
2. witness statements
3. evidence of prior learning or attainment
4. written questions
5. oral questions
6. assignments
7. case studies.

All evidence should be documented in the portfolio of evidence. Constructing the portfolio of evidence should not be left to the end of the course. Practical observation feedback sheets are presented in *Appendix 1* to provide formative feedback to learners.

Many frequently asked questions and other useful information are detailed in the VTCT Learner's Handbook, which is available on the VTCT website at www.vtct.org.uk/students. Other questions should be addressed to the tutor, lecturer or assessor.

Standardisation

Centres will be required to provide samples of assessment tasks for regional and national standardisation activity.

Assessment specification

This section provides an overview of the assessments that make up each unit in this qualification. Detailed information on specific assessments is provided within each unit.

UV20522 – Anatomy and physiology for exercise

1) Externally set and marked multiple choice theory paper

UV20525 – Principles of exercise, fitness and health

1) Externally set and marked multiple choice theory paper

UV20523 – Know how to support clients who take part in exercise and physical activity

1) Internally assessed portfolio of evidence

UV20524 – Health, safety and welfare in a fitness environment

1) Internally assessed portfolio of evidence

UV20528 – Planning water-based exercise

1) Internally assessed portfolio of evidence

UV20529 – Instructing water-based exercise

1) Internally assessed portfolio of evidence
2) Internally assessed practical observations of the learner delivering exercise to music sessions

Unit structure

The following table provides a description of each section that makes up a unit:

Unit section	Description
VTCT unit code	This code is unique to the unit and should be quoted in all queries and correspondence to VTCT.
Unit title	The title clearly indicates the focus of the unit.
Level	Level is an indication of the demand of the learning experience; the depth and / or complexity of achievement and independence in achieving the learning outcomes. There are eight levels of achievement within the QCF.
Credit value	This is the number of credits awarded upon successful achievement of all unit learning outcomes. Credit is viewed as a numerical value and represents a means of recognising, measuring, valuing and comparing achievement.
Guided learning hours (GLH)	GLH is an estimate of the time allocated to teach, instruct, assess and support learners throughout a unit. Learner initiated private study, preparation and marking of formative assessment is not taken into account.
Unit aims	This is a short overview of the unit content.
Learning outcomes	The learning outcomes are the most important component of the unit; they set out what is expected in terms of knowing, understanding and practical ability as a result of the learning process. ***Learning outcomes are the results of learning.***
Assessment criteria	Assessment criteria set out what is required, in terms of achievement, to meet the learning outcome. The assessment criteria and learning outcomes are the components that inform the learning and assessment that should take place. ***Assessment criteria define the standard expected to meet the learning outcomes.***
Assessment requirements	Briefly outlines the assessment requirements of the unit.
Endorsement	This section lists the sector skills council (SSC), standards setting body (SSB) or other agency that approves or endorses the unit.
QAN	This is the qualification accreditation number, as issued by Ofqual.
Unit syllabus	This section presents the content that must be covered when delivering the unit.

Guidance on assessment	The following may be indicated: • The mode of assessment (e.g. internal or external) • The method of assessment (e.g. portfolio of evidence, multiple choice examinations etc.) • Particular assessment material that must be used (where applicable) Where possible, VTCT will provide guidance and support on assessment.
Record of assessment	This section must be completed by the assessor and internal verifier (where applicable) and is a record of a learner's achievements. It is a record of which assessment criteria have and have not been achieved.

Unit UV20522
Anatomy and physiology for exercise

Unit aim

It is the aim of this unit to develop learners' knowledge and understanding of the anatomy and physiology relating to exercise programming for apparently healthy adults of all ages.

Level:	2
Credit value:	6
GLH:	41

Learning outcomes ***The learner will:***	**Assessment criteria** ***The learner can:***
LO1: Understand the structure and function of the circulatory system	**AC1.1:** Identify the location of the heart **AC1.2:** Describe the function of the heart **AC1.3:** Describe the structure of the heart **AC1.4:** Describe how blood moves through the four chambers of the heart **AC1.5:** Describe systemic and pulmonary circulation **AC1.6:** Describe the structure and functions of blood vessels **AC1.7:** Define blood pressure **AC1.8:** Identify blood pressure classifications
LO2: Understand the structure and function of the respiratory system	**AC2.1:** Identify the location of the lungs **AC2.2:** Describe the function of the lungs **AC2.3:** Describe the structure of the lungs **AC2.4:** Identify the main muscles involved in breathing **AC2.5:** Describe the passage of air through the respiratory tract **AC2.6:** Describe the process of gaseous exchange of oxygen and carbon dioxide in the lungs
LO3: Understand the structure and function of the skeleton	**AC3.1:** Describe the basic functions of the skeleton **AC3.2:** Identify the structures of the axial skeleton

	AC3.3: Identify the structures of the appendicular skeleton **AC3.4:** Explain the classification of bones **AC3.5:** Explain the structure of long bone **AC3.6:** Explain the stages of bone growth **AC3.7:** Describe posture in terms of: • curves of the spine • neutral spine alignment • potential ranges of motion of the spine • postural deviations to include kyphosis, lordosis, scoliosis and the effect of pregnancy
LO4: Understand joints in the skeleton	**AC4.1:** Describe the classification of joints **AC4.2:** Describe the structure of synovial joints **AC4.3:** Describe the types of synovial joints and their range of motion **AC4.4:** Describe joint movement potential and joint actions
LO5: Understand the muscular system	**AC5.1:** Identify the three types of muscle tissue **AC5.2:** Define the characteristics and functions of the three types of muscle tissue **AC5.3:** Describe the basic structure of skeletal muscle **AC5.4:** Name and locate the anterior skeletal muscles **AC5.5:** Name and locate the posterior skeletal muscles **AC5.6:** Describe the structure and function of the pelvic floor muscles **AC5.7:** Describe the different types of muscle action **AC5.8:** Identify the joint actions brought about by specific muscle group contractions **AC5.9:** Identify skeletal muscle fibre types and their characteristics
LO6: Understand the life-course of the musculoskeletal system and its implications for special populations exercise	**AC6.1:** Describe the life-course of the musculoskeletal system, including relevant tendon, ligament, muscle, joint and bone mineral density changes, and their implications for exercise, plus specific implications for working with: • young people in the 14-16 age range • antenatal and postnatal women • older people (50 plus)

LO7: Understand the energy systems and their relation to exercise	**AC7.1:** Describe how carbohydrates, fats and proteins are used in the production of energy / adenosine triphosphate **AC7.2:** Explain the use of the three energy systems during aerobic and anaerobic exercise
LO8: Understand the nervous system and its relation to exercise	**AC8.1:** Describe the role and functions of the nervous system **AC8.2:** Describe the principles of muscle contraction **AC8.3:** Describe the 'all or none law' / motor unit recruitment **AC8.4:** Describe how exercise can enhance neuromuscular connections and improve motor fitness
Additional information about the unit	
Unit expiry date	31/12/2013
Details of the relationship between the unit and relevant national occupational standards (NOS)	This unit is mapped to: Instructing Physical Activity and Exercise (2009) National Occupational Standards
Details of the relationship between the unit and other standards or curricula	N/A
Assessment requirements specified by a sector or regulatory body (if appropriate)	This unit is externally assessed in accordance with the Level 2 Fitness Instructing Assessment Strategy developed by SkillsActive. Please see the 'Guidance on assessment' chapter for further details.
Endorsement of the unit by a sector or other appropriate body	Approved by SkillsActive, the sector skills council for active leisure and learning.
QAN	H/600/9013

Unit UV20522
Anatomy and physiology for exercise

Unit syllabus

All content in this section must be covered when delivering this unit.

LO1: Understand the structure and function of the circulatory system

Location of heart: located centrally in the chest; mediastinum; thorax; between lungs; apex towards left hip.

Function and structure of heart: function of heart (circulation of blood, receiving and pumping blood to body and lungs); structure of heart (myocardium, septum, atria, ventricles, atrioventricular valves, semi-lunar valves, aorta, superior vena cava, inferior vena cava, pulmonary veins, pulmonary arteries).

Blood flow through heart chambers: pulmonary circulation; deoxygenated blood; vena cava; right atrium, tricuspid valve; right ventricle; semi-lunar valve; pulmonary artery; lungs; gaseous exchange; oxygenated blood; pulmonary vein; left atrium; bicuspid valve; left ventricle; semi-lunar valve; aorta; systemic circulation; functional considerations (e.g. stroke volume, cardiac output).

Systemic and pulmonary circulation: systemic (oxygenated blood from lungs, pulmonary vein, left atrium, left ventricle, aorta; arteries, arterioles, capillaries, muscles and organs); pulmonary (deoxygenated blood from muscles and organs, capillaries, venules, veins, vena cava, right atrium, right ventricle, deoxygenated blood to the lungs for oxygenation).

Structure and function of blood vessels: arteries (tunica interna, tunica media, tunica externa); arterioles; capillaries; veins (tunica interna, tunica media, tunica externa, one way valves); venules; comparison between blood vessels (wall thickness, internal diameter, direction of blood flow, pressure, presence of valves); functions of blood vessels (transport blood, blood flow distribution by vasoconstriction and vasodilation); function of arteries and arterioles (transport oxygenated blood to muscles and organs), functions of veins and venules (transport deoxygenated blood back to the heart, venous return); functions of capillaries (exchange of gases and nutrients between blood and tissues).

Blood pressure: definition of blood pressure (pressure exerted by blood on vessel wall); systolic pressure (contraction); diastolic pressure (relaxation); blood pressure classifications (hypotension, normal, high normal, mild hypertension, moderate hypertension, severe hypertension); short and long term effects of exercise on blood pressure.

LO2: Understand the structure and function of the respiratory system

Location of the lungs: located laterally in the chest on left and right sides; mediastinum; thorax; pleural membrane layer; visceral membrane layer; serous membrane layer.

Function and structure of the lungs: function of lungs (paired organs for ventilation, external and internal respiration, elimination of carbon dioxide, supply of oxygen); structure of lungs (left lung - two lobes, right lung - three lobes, bronchus, bronchioles, sub-divisions, capillaries, alveoli, alveolar sacs).

Muscles involved in breathing: inhalation (inspiration); exhalation (expiration); muscles involved (diaphragm, external intercostals); forced inspiration accessory muscles (sternocleidomastoids, scalenes, pectoralis minor); forced expiration muscles (internal intercostals, transversus abdominus, rectus abdominus); functional considerations (e.g. total lung capacity, vital capacity).

Passage of air during breathing: upper respiratory tract (mouth, nose and pharynx); lower respiratory tract (larynx, trachea, bronchi, bronchioles); alveoli; alveolar sacs.

Process of gaseous exchange: surface area for gas exchange (300million alveoli, 2400km of airways); partial pressure difference (higher and lower partial pressures); diffusion of gases; effect of breathing rate and depth; relative composition of inhaled air (21% oxygen, 0.04 % carbon dioxide); relative composition of alveolar air (14% oxygen, 5.5 % carbon dioxide); relative composition of exhaled air (16% oxygen, 4.5% carbon dioxide).

LO3: Understand the structure and function of the skeleton

Functions of the skeleton: support and shape; protection; muscle attachment and movement; production of blood cells; mineral homeostasis; storage of energy.

Structures of axial skeleton: names and locations of bones including cranium; cervical vertebrae (seven); thoracic vertebrae (twelve); lumbar vertebrae (five); sacral vertebrae (five); coccyx (three to five); intervertebral discs; sternum; ribs.

Structures of appendicular skeleton: names and locations of bones including scapula; clavicle; humerus; radius; ulna; carpals; metacarpals; phalanges; ilium; ischium; pubis; femur; patella; tibia; fibula; tarsals; metatarsals; phalanges.

Classification of bones: long (e.g. femur, tibia); short (e.g. tarsals, carpals); flat (e.g. scapula, pelvis); irregular (e.g. vertebrae); sesamoid (e.g. patella); classification based on structure and function.

Structure of long bone: characteristics (greater length than width, slightly curved); structure (diaphysis, epiphyses, metaphysis, articular cartilage, periosteum, medullary, endosteum, compact bone, spongy bone, bone marrow).

Stages of bone growth: development of cartilage; growth of cartilage; development of ossification centre; development of diaphysis and epiphysis; ossification (osteoblasts, osteoclasts); changes in bone growth with age; importance of calcium; factors affecting bone density (exercise, age and osteoporosis).

Posture and curves of the spine: natural mild S-shaped curve of the spine (cervical and lumbar lordoses, thoracic and spinal kyphoses); primary curves of the spine; secondary (developmental) curves of the spine.

Posture and neutral spine alignment: optimum position of spine and pelvis; maintenance of the natural spinal curvature (cervical, thoracic, lumbar); maintenance of posture in standing, sitting, lying positions.

Posture and potential ranges of motion of the spine: cervical (rotation, flexion and extension); thoracic (rotation, limited flexion and extension); lumbar (flexion, extension, hyperextension); sacral (no range of motion); coccyx (no range of motion); normal thoracic kyphosis (20-45 degrees); normal lumbar lordosis (20-45 degrees); scoliosis (a right-left curve of more than 10 degrees).

Postural deviations: excessive deviations (hyperlordotic and hyperkyphotic); less than normal deviations (hypolorditic and hypokyphotic); definitions and causes (kyphosis, lordosis, scoliosis); effect of pregnancy on posture (e.g. how carrying a baby affects the natural curve).

LO4: Understand joints of the skeleton

Classification of joints: structural classifications (fibrous e.g. cranium, cartilaginous e.g. vertebrae, synovial e.g. knee); functional classifications (synarthrosis / immovable, amphiarthrosis / slightly moveable, diarthrosis / freely moveable).

Structure of synovial joints: articular capsule; fibrous capsule; synovial cavity; synovial membrane; synovial fluid (lubrication); articular cartilage (shock absorption, decrease friction between bones); bursae (shock absorption); ligaments (attach bone to bone, joint stability).

Types of synovial joints and range of motion: gliding (side to side, back and forth e.g. between carpals and tarsals); pivot (rotation e.g. atlas and axis); saddle (flexion, extension, abduction, adduction, circumduction e.g. thumb); ellipsoid (flexion, extension, abduction, adduction, circumduction e.g. wrist); ball and socket (flexion, extension, abduction, adduction, rotation, circumduction e.g. hip and shoulder); hinge (flexion and extension e.g. knee and elbow).

Joint movement potential and actions: shoulder (flexion, extension, abduction, adduction, horizontal flexion / adduction, horizontal extension / abduction, internal rotation, external rotation); elbow (flexion, extension, supination, pronation); shoulder girdle (elevation, depression, protraction,

retraction); spine (flexion, extension, lateral flexion, rotation); hip (flexion, extension, abduction, adduction, internal rotation, external rotation); knee (flexion, extension); ankle (plantarflexion, dorsiflexion, inversion, eversion); actions during different exercises.

LO5: Understand the muscular system

Muscle tissue types, characteristics and functions: skeletal muscle (striated, voluntary, very large fibre diameter, short to moderate fibre length, fast speed of contraction, attach to bones, e.g. quadriceps); cardiac muscle (striated, involuntary, large fibre diameter, moderate fibre length, moderate speed of contraction, e.g. heart muscle / myocardium); smooth muscle (no striations, involuntary, small fibre diameter, short to long fibre length, slow speed of contraction, e.g. artery walls).

Structure of skeletal muscle: tendon (attach muscle to bone); epimysium, perimysium; endomysium; fascicle; muscle fibres; myofibrils; myofilaments (actin, myosin); sarcolemma; sarcomere (Z discs, H zone, M line, A band, I bands); arrangement of fasciculi (parallel, fusiform, pennate).

Muscle names and locations: anterior muscles (pectoralis major, anterior deltoids, medial deltoids, biceps, rectus abdominis, obliques, transverse abdominis, hip flexors, quadriceps, adductors, anterior tibialis); posterior muscles (trapezius, rhomboids, medial deltoids, posterior deltoids, triceps, latissimus dorsi, erector spinae, gluteals, abductors, hamstrings, gastrocnemius, soleus); diaphragm, intercostals.

Structure and function of pelvic floor muscles: levator ani (pubococcygeus, puborectalis, and iliococcygeus); coccygeus; associated connective tissues which span the area underneath the pelvis (perineum, perineal membrane, perineal pouch); pelvic cavity; function (stability of the pelvis, support bladder and bowel, support uterus in women).

Types of muscle action: definitions of muscle contractions (isotonic concentric, isotonic eccentric, static / isometric, isokinetic); definitions of muscle roles (agonist / prime mover, antagonist, synergist / assistor, fixator); contractions and muscle roles during different exercises.

Joint actions: pectoralis major (adduction of arm, horizontal flexion of arm); deltoids (abduction of the shoulder, flexion and extension of the shoulder); biceps (flexion of the elbow); rectus abdominis (flexion of the spine); obliques (lateral flexion and rotation of the spine); transverse abdominis (isometric stabilisation of the spine); hip flexors (flexion of the hip); quadriceps (extension of the knee, flexion of the hip); adductors (adduction of the hip); anterior tibialis (dorsi flexion of the ankle); trapezius (extension of the neck, elevation of the shoulder, depression of the scapula, retraction of the scapula); triceps (extension of the elbow); latissimus dorsi (adduction of the shoulder, shoulder extension); erector spinae (extension of the spine); gluteals (extension of the hip); abductors (abduction of the hip); hamstrings (flexion of the knee, extension of the hip); gastrocnemius (plantar flexion of the ankle, assist flexion of knee); soleus (plantar flexion of ankle with bent knee); joint actions during different exercises.

Muscle fibre types and characteristics: fast twitch type 2 (white in colour, high intensity, short duration, low in mitochondria, low in myoglobin, fast contraction speed, fast to fatigue); slow twitch oxidative type 1 (red in colour, low intensity, long duration / endurance, high in mitochondria, high in myoglobin, slow contraction speed, resistant to fatigue).

LO6: Understand the life-course of the musculoskeletal system and its implications for special populations exercise

Life-course of the musculoskeletal system for young people between 14-16 years: life-course (muscular hypertrophy, strength and power development, increase in bone density, strengthened attachment of tendons and ligaments); implications for exercise (differentiation between improvements through natural development or exercise, consideration of developing joint structures, gradual warm up and cool down, avoid heavy resistance exercises, use RPE to monitor exercise intensity, resistance training should use light weights and high reps, emphasise correct exercise technique, rest and recovery to avoid overuse and over training).

Life-course of the musculoskeletal system for antenatal and postnatal women: life-course (weight gain, decreased bone density, increased force at joints and tendons, excessive lumbar lordosis, joint and ligament laxity in the lumbar spine, change in centre of gravity, weakness in abdominal muscles, widening of sacroiliac joints and pubic symphysis, increase in anterior pelvic tilt); implications for exercise (avoid supine exercise after 16 weeks of pregnancy, avoid prone exercise, avoid prolonged motionless standing, avoid heavy isometric or overhead resistance exercise, avoid leg adduction and abduction against resistance, avoid loaded forward flexion, avoid rapid changes of direction, avoid uncontrolled twisting or ballistic movements, avoid risk of falling or trauma, avoid high intensity or impact exercise, avoid crunching and twisting abdominal exercises).

Life-course of the musculoskeletal system for older people (50 plus): life-course (1-2% loss in physical fitness each year, loss of neuromuscular function, signs and symptoms of potentially serious musculoskeletal disease, muscular atrophy and decreased muscular strength, decrease in bone density and bone strength, demineralisation in bones, development of osteoporosis, degradation of ligaments and tendons); implications for exercise (undertake longer and more gradual mobility and warm up, undertake a gradually tapered cool down, exercise intensity must be at a challenging but health-related level, use RPE scale to monitor intensity, emphasise correct exercise technique, increase duration of transitions, simplify exercise when required, learn new exercises at the most basic level, avoid extreme spinal flexion).

LO7: Understand the energy systems and their relation to exercise

Nutrients and the production of energy: carbohydrate (e.g. bread, pasta); proteins (e.g. meat, fish); fats (e.g. cheese, butter); energy yield per gram of macronutrient; carbohydrates (break down into glucose, glycogen storage in muscles and liver); fats (break down into fatty acids in presence of oxygen, stored as adipose tissue, protection, energy store); protein (break down into amino acids, growth and repair of muscle, used for energy when other nutrients are depleted); water (hydration); Adenosine Triphosphate (break down and resynthesis, energy equation).

Energy systems: energy molecules (ADP, ATP); systems (creatine phosphate system, glycolytic system, aerobic system).

Use of energy systems during exercise: creatine phosphate system (high intensity activity of 6-10 seconds); glycolytic system (moderate to high intensity activity of up to 90 seconds); aerobic system (low to moderate intensity of above 90 seconds); the energy continuum for intensity and duration; relative percentage contributions of energy systems during different activities.

LO8: Understand the nervous system and its relation to exercise

Roles and functions of the nervous system: main functions (sense changes to stimuli, information processing, response to stimuli); central nervous system components (brain, spinal cord); CNS roles (receive messages from peripheral nervous system about environment, interprets information, sends messages back to the peripheral nervous system); peripheral nervous system components (sensory neurons, motor neurons); PNS roles (transmits information from receptors to CNS, transmits information from CNS to muscles and glands); peripheral nervous system divisions (autonomic nervous system, somatic nervous system, sympathetic system, parasympathetic system).

Specific nervous system functions and roles: somatic system roles (sensory input, control of voluntary muscle); autonomic system roles (sense hormonal balance, internal organ function, control of involuntary muscle, control of endocrine glands); sympathetic division roles (increase heart rate, increase breathing rate, mobilise energy stores, regulation of blood pressure, blood flow redistribution, most active during exercise); parasympathetic division (slows down functions, more active during rest and recovery).

Principles of muscle contraction: sliding filament theory (myosin and actin, cross bridges, shortening of sarcomere); process (attachment of myosin to actin, power stroke, detachment, ATP and energy transfer).

Motor unit recruitment: motor units (motor neuron, muscle fibre); small motor units (type I); large motor units (type II); all or none law (if a stimulus is above threshold individual muscle fibres fully

contract, if a stimulus is below threshold muscles fibres do not contract); strength of muscle contraction.

Exercise and neuromuscular enhancement: aerobic training adaptations (improved aerobic capacity of trained muscles, glycogen sparing, increased fat utilisation); resistance training adaptations (improved motor recruitment, increased ability to achieve stronger muscle contractions, muscle fibre hypertrophy, muscle fibre hyperplasia, improved recruitment of fast twitch fibres); motor skills training adaptations (growth of new nervous system connections, increased frequency of nerve impulses to motor units, improved synchronous motor unit recruitment, improved inter-muscular co-ordination, automatic performance of movement patterns).

Unit UV20522
Anatomy and physiology for exercise

Guidance on assessment

External assessment

This unit is externally assessed and verified using the following assessment tools:

1) Multiple choice theory paper produced and assessed by VTCT
    a. Time allocated – 70 minutes
    b. Structure of paper
        i. Total number of questions – 50
        ii. Pass mark of 35 (70%)

Unit UV20522
Anatomy and physiology for exercise

Record of assessment

Name of learner	VTCT number

This table must be completed by the tutor or assessor.

Multiple choice paper mark (pass mark 35)	Assessor signature	Assessor number	Date

Internal verification record (if applicable)		
Internal verifier signature	Internal verifier number	Date

Unit UV20525

Principles of exercise, fitness and health

Unit aim

It is the aim of this unit to develop learners' knowledge and understanding of safe and effective exercise for a range of clients, the health benefits of physical activity and the importance of healthy eating.

Level:	2
Credit value:	4
GLH:	28

Learning outcomes ***The learner will:***	**Assessment criteria** ***The learner can:***
LO1: Understand the effects of exercise on the body	**AC1.1:** Describe cardiovascular and respiratory adaptations to endurance / aerobic training **AC1.2:** Identify the short and long term effects of exercise on blood pressure **AC1.3:** Describe the "blood pooling" effect following exercise **AC1.4:** Describe the effects of exercise on bones and joints including the significance of weight bearing exercise **AC1.5:** Describe Delayed Onset Muscle Soreness (DOMS) **AC1.6:** Identify exercises or techniques likely to cause delayed onset of muscle soreness **AC1.7:** Describe the short and long term effects of different types of exercise on muscle **AC1.8:** Describe different exercises that can improve posture
LO2: Understand the components of fitness	**AC2.1:** Define the components of health related fitness **AC2.2:** Define the components of skill related fitness **AC2.3:** Identify the factors that affect health and skill related fitness

LO3: Understand how to apply the principles and variables of fitness to an exercise programme	**AC3.1:** Describe the physiological implications of: • specificity • progressive overload • reversibility • adaptability • individuality • recovery time **AC3.2:** Explain the principles of FITT (Frequency, Intensity, Time and Type) **AC3.3:** Explain the principles of a progressive training programme in developing components of fitness **AC3.4:** Explain how to recognise when and how to regress a training programme **AC3.5:** Explain the principles of adaptation, modification and progression for each component of FITT (Frequency, Intensity, Time and Type) **AC3.6:** Describe the effect of speed on posture, alignment and intensity **AC3.7:** Describe the effect of levers, gravity and resistance on exercise **AC3.8:** Describe the differences between programming exercise for physical fitness and for health benefits
LO4: Understand the exercise contraindications and key safety guidelines for special populations	**AC4.1:** Describe the exercise contraindications and key safety guidelines for working with older people (50+) **AC4.2:** Describe the exercise contraindications and key safety guidelines for working with antenatal and postnatal clients **AC4.3:** Describe the exercise contraindications and key safety guidelines for working with young people (14-16 years) **AC4.4:** Describe the key safety considerations for working with disabled people
LO5: Understand how to safely monitor exercise intensity	**AC5.1:** Describe the benefits and limitations of different methods of monitoring exercise intensity including: • the talk test • Rating of Perceived Exertion (RPE) • heart rate monitoring and the use of different heart rate zones

LO6: Understand the health benefits of physical activity	**AC6.1:** Describe the health benefits of physical activity **AC6.2:** Describe the effect of physical activity on the causes of certain diseases including: • coronary heart disease • some cancers • type 2 diabetes • hypertension • obesity • osteoporosis
LO7: Understand the importance of healthy eating	**AC7.1:** Describe the national food model / guide **AC7.2:** Describe key healthy eating advice that underpins a healthy diet **AC7.3:** Explain the importance of adequate hydration **AC7.4:** Explain professional role boundaries in relation to offering nutritional advice **AC7.5:** Explain the dietary role of the key nutrients **AC7.6:** Identify the common dietary sources of the key nutrients **AC7.7:** Describe the energy balance equation **AC7.8:** Explain the health risks of poor nutrition
Additional information about the unit	
Unit expiry date	31/12/2013
Details of the relationship between the unit and relevant national occupational standards	This unit is mapped to: Instructing Physical Activity and Exercise (2009) National Occupational Standards: • D462 - Apply the principles of nutrition to support client goals as part of an exercise and physical activity programme
Details of the relationship between the unit and other standards or curricula	N/A
Assessment requirements specified by a sector or regulatory body	This unit is externally assessed in accordance with the Level 3 Personal Training Assessment Strategy developed by SkillsActive. Please see the 'Guidance on assessment' chapter for further details.
Endorsement of the unit by a sector or other appropriate body	Approved by SkillsActive, the sector skills council for active leisure and learning.
QAN	A/600/9017

Unit UV20525
Principles of exercise, fitness and health

Unit syllabus

All content in this section must be covered when delivering this unit.

LO1: Understand the effects of exercise on the body

Adaptations to endurance training: cardiovascular (improved oxygen transport, increased heart size, increased stroke volume, decreased resting heart rate, increased cardiac output, improved blood flow distribution, increased blood volume, capillarisation, decreased blood pressure; respiratory (improved pulmonary ventilation, improved pulmonary diffusion, arterial-venous oxygen difference, decreased resting breathing rate, increased lung capacity).

Effects of exercise on blood pressure: short term effects of exercise (no change in diastolic pressure, progressive increase in systolic pressure); long term effects of exercise (reduction in overall resting blood pressure, improved regulation of overall blood pressure).

Blood pooling: in the extremities; venous return (skeletal muscle pump, non-return valves); associated risks (dizziness, fainting); prevention of blood pooling through progressive cool down.

Effects of exercise on bones and joints: improved bone density; increased joint stability; improved mobilisation and range of motion at joints; significance of weight bearing exercise (bone structure, ageing and osteoporosis); types of weight bearing exercise (e.g. walking, running, resistance training); potential risk of injury.

Delayed onset muscle soreness (DOMS): structural muscle damage (microscopic fibre tears, muscle cell leakage); effects of eccentric muscle contractions; causal exercises and techniques (e.g. plyometrics, eccentric resistance training, isometric training, downhill running, higher than normal exercise intensity).

Effects of exercise on muscle: short term (increased contractility, increased excitability, increased elasticity, increased energy metabolism, heat generation); long term effects of aerobic exercise (increased concentration of aerobic enzymes, increased size and number of mitochondria, increased ability to use fat as an energy source, increased storage of muscle glycogen, increased supply of intramuscular fat, increased myoglobin, increased number of capillaries); long term effects of resistance training (increase in muscle mass and cross-sectional area, possible increase in number of muscle fibres, increased motor unit recruitment).

Exercises to improve posture: floor-based core stability exercises, equipment-based core-stability exercises, exercise starting positions (standing, seated, lying prone, lying supine, lying sideways, hand and knees); equipment (swiss ball, stability discs, cable machines); other functional multi-joint exercises; progression of exercises (resistance through levers and external, combined movements, rate and speed of movement, repetitions, range of motion); technique consideration (correct pelvic tilt, neutral spine, engaging core muscles).

LO2: Understand the components of fitness

Components of fitness: definitions of health-related fitness components (cardiovascular endurance, muscular endurance, flexibility, muscular strength, body composition); definitions of skill related fitness components (speed, power, agility, balance, coordination, reaction time); importance of fitness components for different activities.

Factors affecting fitness: genetics; gender; age; body type; training status; lifestyle factors (nutrition, smoking, alcohol, drugs, rest, stress).

LO3: Understand how to apply the principles and variables of fitness to an exercise programme

Principles and variables of training: definitions (specificity, progressive overload, reversibility, adaptability, individuality, recovery time); associated physiological implications; application for each component of fitness.

FITT principles: definitions (Frequency, Intensity, Time, Type); application for each component of fitness.

Progression of a training programme: training needs analysis; adaptation, modification and progression; ACSM guidelines (cardiovascular health, cardiovascular fitness, muscular strength and endurance, flexibility); progression through FITT; periodisation cycles (macrocycle, mesocycle, microcycle, training units); examples of periodisation cycles for different types of training; importance of periodisation for goal setting and achievement; SMART goal setting (specific, measureable, achievable, realistic, time bound).

Regression of a training programme: causes of over-training (inadequate recovery, over participation in competition, repetitive and boring training, consistent high-intensity, high levels of non-training stress); recognising signs and symptoms of overtraining (condition and performance, psychological, movement co-ordination); periodisation through manipulation of training principles and variables (intensity, volume); guidelines for prevention and recovery of overtraining; importance of rest and recovery.

Effect of speed: slow exercise speed (allows strict posture, allows accurate alignment); faster exercise speed (increases intensity, increases potential for injury risk, increases potential for improper posture and alignment).

Effect of levers, gravity and resistance: levers during exercise (first class, second class, third class); effects of levers on exercise (speed of movement, force generation, range of motion, torque loads); gravity (speed and control of eccentric movements, power generation); resistance (intensity, speed of movement).

Exercise programming differences: ACSM physical fitness guidelines; ACSM health benefits guidelines; reasons for differences.

LO4: Understand the exercise contraindications and key safety guidelines for special populations

Exercise contraindications and key safety guidelines for older adults (50+): clients (screened and asymptomatic, little or no experience of the type of exercise, only 1% of the 50+ population is highly trained activity levels are low and decline with age, 1-2% loss in physical components of fitness each year); contraindications (loss of physiological and psychological function, poor functional status, signs and symptoms of potentially serious disease, sensory and cognitive declines); safety guidelines (undertake a pre-exercise health screening, refer to other professional if required, undertake longer and more gradual mobility and warm up, undertake a gradually tapered cool down, exercise intensity must be at a challenging but health-related level, use RPE scale to monitor intensity, emphasise correct exercise technique, increase duration of transitions, simplify exercise when required, learn new exercises at the most basic level, avoid extreme spinal flexion).

Exercise contraindications and key safety guidelines for antenatal and post natal women: clients (normal and healthy adult women, normal and healthy pregnancy, normal and healthy birth, previously normal and healthy pregnancies and births); contraindications (injury, joint misalignment, muscle imbalance, motor skill decline, embolism, thrombosis, haemorrhage, pelvic floor dysfunction, neck and shoulder pain, experiencing other pregnancy-related symptoms); safety guidelines (non exercisers should begin with 15 minutes continuous aerobic activity gradually increasing to 30 minutes, do not exceed 45 minutes duration, maintain adequate hydration and calorie intake, avoid exercising in hot and humid conditions, use the RPE scale to monitor intensity not heart rate, avoid supine exercise after 16 weeks of pregnancy, avoid prone exercise, avoid prolonged motionless standing, avoid heavy isometric or overhead resistance exercise, avoid leg adduction and abduction against resistance, avoid loaded forward flexion, avoid rapid changes of direction, avoid uncontrolled twisting or ballistic movements, avoid risk of falling or trauma, avoid high intensity or impact exercise,

re-educate post birth women on posture and joint alignment before progressing, avoid crunching and twisting abdominal exercises, babies should be excluded from the exercise area, ensure instructor first aid skills are up to date, follow exercise guidelines for trimesters of pregnancy).

Exercise contraindications and key safety guidelines for young people (14-16 years): clients (screened and asymptomatic, apparently healthy young people); contraindications (stage of growth and development, musculoskeletal injuries); safety guidelines (wear appropriate clothing and footwear, undertake a gradual warm up and cool down, avoid heavy resistance exercises, use RPE to monitor exercise intensity, resistance training should use light weights and high reps, emphasise correct exercise technique, avoid ballistic stretching, ensure adequate hydration and calorie intake).

Exercise contraindications and key safety guidelines for disabled people: contraindications (impaired physical condition and function, impaired motor skills, impaired neurological or cognitive function, impaired sensory function, musculoskeletal imbalances and postural deviations); safety guidelines (undertake exercise in a safe and supportive environment, make reasonable adjustments to enable access, refer to other professionals if required, adapt exercise for the disability, provide specialist assistance if required, incorporate functional and life-related movement, use specialist equipment if required).

LO5: Understand how to safely monitor exercise intensity

Methods of monitoring exercise intensity: talk test; Rating of Perceived Exertion (RPE); heart rate monitoring; using different heart rate training zones (for health benefits, for specific fitness improvements); benefits and limitations of methods (specific client's needs, safety, practicality, reliability, validity).

LO6: Understand the health benefits of physical activity

Health benefits of physical activity: reduced early mortality; reduced morbidity (e.g. CHD, diabetes); improved mental health and psychological well being (anxiety, depression, stress, mood); cardio-protective mechanisms; improved weight management and body composition; improved posture; prevention of lower back pain; reduced risk of injury; improved joint stability; increased bone density; improved ability to perform active daily living tasks.

Effect of physical activity on disease causes: Coronary Heart Disease (reduced blood pressure, improved blood cholesterol profile, improved elasticity of blood vessels, improved blood flow distribution), some cancers (reduced stress and lifestyle changes), Type 2 Diabetes (improved regulation of insulin, improved blood glucose regulation); hypertension (reduced blood pressure, improved blood flow distribution, improved elasticity of blood vessels, reduced muscular tension, reduced stress level); obesity (improved fat metabolism, increased calorie expenditure); osteoporosis (increased bone formation, improved density, improved posture, reduced risk of injury).

LO7: Understand the importance of healthy eating

Healthy eating: principles of a healthy balanced diet; National Food Guide; Food Standards Agency (FSA) eat well plate (balance of good health); Government Department of Health Five a Day recommendation.

Importance of hydration: type of drink; intake quantity; timing of intake; importance (maintain body balance / homeostasis, maintains body processes and functions, maintains physical and mental performance).

Professional role boundaries: Code of Ethics; REPS Code of Conduct; when to refer to GP or dietary professionals (obesity, malnutrition, excessively underweight, eating disorders).

Key nutrients: macronutrients (carbohydrates, fats, proteins); micronutrients (water soluble vitamins C and B, fat soluble vitamins A, D, E and K); minerals (calcium, copper, iron, magnesium, phosphorus, potassium, sodium, selenium, zinc); water.

Dietary role of key nutrients: carbohydrate (energy, digestion, nervous system function); fats (provide essential fatty acids, insulation, protection of vital organs, energy, transport fat-soluble vitamins); protein (muscle growth, muscle repair, oxygen transport, fight disease, energy); vitamins (energy metabolism, protein synthesis, glycogen synthesis, blood clotting, red blood cell formation, aids growth, maintenance of teeth and bones, aids vision); minerals (bone growth, teeth growth, energy production, enzyme function, nerve and muscle function, water balance, blood clotting, oxygen transport in red blood cells); water (maintain hydration, maintain homeostasis, heat regulation, maintain blood plasma volume, removal of waste products).

Dietary sources of the key nutrients: simple carbohydrates (e.g. sugar, sweets, chocolate, fruit), complex carbohydrates (e.g. beans, bread, pasta, potatoes, rice, corn); fats (e.g. meat, dairy products, processed foods cakes, biscuits, pies, oils); protein (e.g. meat, fish, eggs, dairy products, grains, beans, leafy vegetables); vitamins (e.g. vegetables, fruit, milk, fish, eggs); minerals (e.g. milk, nuts, vegetables, meats).

Energy balance equation: energy needs for different activities; energy intake; energy expenditure; positive energy balance; negative energy balance; basic metabolic rate (BMR); physical activity levels; calculating energy intake and expenditure.

Health risks of poor nutrition: obesity; diabetes; malnutrition; heart disease; stroke; osteoporosis; cancer; poor circulation; hypertension; arthritis; mental health problems (depression, anxiety, low self-image).

Unit UV20525
Principles of exercise, fitness and health

Guidance on assessment

External assessment

This unit is externally assessed and verified using the following assessment tools:

1) Multiple choice theory paper produced and assessed by VTCT
    a. Time allocated – 50 minutes
    b. Structure of paper
        i. Total number of questions – 30
        ii. Pass mark of 21 (70%)

Unit UV20525
Principles of exercise, fitness and health

Record of assessment

Name of learner	VTCT number

This table must be completed by the tutor or assessor.

Multiple choice paper mark (pass mark 21)	Assessor signature	Assessor number	Date

Internal verification record (if applicable)		
Internal verifier signature	Internal verifier number	Date

Unit UV20523

Know how to support clients who take part in exercise and physical activity

Unit aim

It is the aim of this unit to develop learners' knowledge and understanding of how to support clients and provide ongoing customer service. Learners will also develop the skills to support clients taking part in exercise and physical activity.

Level:	2
Credit value:	2
GLH:	13

Learning outcomes ***The learner will:***	**Assessment criteria** ***The learner can:***
LO1: Understand how to form effective working relationships with clients	**AC1.1:** Explain why it's important to form effective working relationships with clients **AC1.2:** Explain why it's important to present oneself and the organisation positively to clients **AC1.3:** Describe how different communication skills can be used to assist clients with motivation **AC1.4:** Explain the importance of valuing equality and diversity when working with clients
LO2: Understand how to address barriers to exercise / physical activity that clients experience	**AC2.1:** Identify the typical barriers to exercise / physical activity that clients experience **AC2.2:** Explain how incorporating clients' exercise / physical activity preferences into their programme can strengthen motivation and adherence **AC2.3:** Describe different incentives and rewards that can strengthen clients' motivation and adherence **AC2.4:** Describe different strategies that can help clients overcome typical barriers to exercise / physical activity
LO3: Understand how to support clients to adhere to exercise / physical activity	**AC3.1:** Explain why it is important for a client to take personal responsibility for their own fitness and motivation **AC3.2:** Describe how to assist clients to develop their own strategy for motivation and adherence **AC3.3:** Identify different behaviour change approaches / strategies to encourage adherence to exercise and physical activity

	AC3.4: Describe how to set short, medium and long term SMART goals **AC3.5:** Describe how to review and revise short, medium and long term SMART goals
LO4: Understand how to provide ongoing customer service to clients	**AC4.1:** Explain the importance of client care both for the client and the organisation **AC4.2:** Explain why it is important to deal with client's needs to their satisfaction **AC4.3:** Identify where to source relevant and appropriate information to meet client's needs **AC4.4:** Explain the importance of dealing with any delay in meeting client's needs timely and effectively **AC4.5:** Give examples of how to exceed customer expectations, when appropriate **AC4.6:** Explain the importance of handling client complaints positively following an organisation's procedure
Additional information about the unit	
Unit expiry date	31/12/2013
Details of the relationship between the unit and relevant national occupational standards	This unit is mapped to: National Occupational Standards - Instructing Physical Activity and Exercise (2009) and Instructing Exercise and Fitness (2009)
Assessment requirements specified by a sector or regulatory body	This unit is internally assessed in accordance with the Level 3 Personal Training Assessment Strategy developed by SkillsActive. Please see the 'Guidance on assessment' chapter for further details.
Endorsement of the unit by a sector or other appropriate body	Approved by SkillsActive, the sector skills council for active leisure and learning.
QAN	M/600/9015

Unit UV20523
Know how to support clients who take part in exercise and physical activity

Unit syllabus

All content in this section must be covered when delivering this unit.

LO1: Understand how to form effective working relationships with clients

Importance of effective working relationship with clients: different clients (specific needs, apparently healthy adults, apparently healthy young people, ante and postnatal clients, disabled clients); importance (gain mutual respect, gain mutual confidence, gain mutual trust, determine client needs, establish rapport).

Importance of positive presentation of self and organisation: gain clients confidence; gain clients respect; enhance professional image and reputation; gain repeat clients; word of mouth; gain new clients.

Communication skills and client motivation: personalised; friendly and welcoming communication with new and returning clients; positive verbal, non-verbal, and body language to provide positive feedback to clients; active listening to encourage clients' views about their performance; demonstration to show and reinforce exercise techniques; informal consultation to discuss client needs and set goals; written communication to summarise agreed goals and plans.

Importance of valuing equality and diversity: to maintain respect and dignity; to ensure fair treatment; to meet individual needs; to provide individual encouragement to reach potential; to provide a safe, supportive and welcoming environment; to ensure equal rights (gender, race, nationality, ethnic or national origin, religious or political beliefs, disability, marital status, social background, family circumstance, sexual orientation, gender reassignment, spent criminal convictions, age or for any other reason).

LO2: Understand how to address barriers to exercise / physical activity that clients experience

Typical barriers to exercise: threatened by 'super-fit instructors / beautiful people'; access; transport; cost; time; energy; lack of motivation; lack of knowledge; self-conscious; low self efficacy; low self esteem; lack of child care; gender; ethnicity; socio-economic status; social pressure; health and injury concerns; readiness to change behaviour.

Incorporating clients' exercise preferences: exercise preferences (health-related, fitness-related, enjoyment-related, social); to strengthen motivation and adherence (increase intrinsic motivation, increase client control and autonomy, increase self efficacy, increase potential competence and ability, increase enjoyment).

Incentives and rewards: physical and psychological health benefits; physical fitness improvements; achievement of personal goals; social interaction; fun and enjoyment; improved ability to complete daily living tasks; positive praise and feedback from others; free memberships; free training sessions; free personal instruction; rewards based on attendance; rewards based on achievement of goals.

Strategies to overcome barriers to exercise: select appropriate exercise activities (ability, fitness level, enjoyment, client needs, peer group); provide financial concessions; appropriate time scheduling of exercise activities; provide accurate exercise information and advice; provide access to child care; referral to relevant health professionals; social support and inclusion; goal setting; positive reinforcement.

LO3: Understand how to support clients to adhere to exercise / physical activity

Importance of taking personal responsibility: increases intrinsic motivation; increases control and autonomy; increases potential for exercise adherence; encourages personal reflection of progress and needs.

Assisting clients to develop their own strategy: discussion-based consultation with client; review of exercise behaviour; agree client needs; address barriers to exercise.

Behaviour change approaches / strategies: behaviour change (stages of behaviour change, relapse prevention model); approaches / strategies (prompting, contract between trainer and client, rewarding attendance, positive feedback on progress, goal setting and review, social support, reduce barriers, provide exercise information and guidance).

Goal setting: needs and wants analysis; SMART principles (specific, measureable, achievable, realistic, time bound); short, medium and long term SMART goals (improve health, develop specific fitness components, sport-specific, improve psychological well-being, improve social interaction, fun and enjoyment, lifestyle, functional ability for daily life, weight management).

Review and revise goals: review short, medium and long term SMART goals; goal review methods (consultation, written client questionnaire, analysis of exercise records); review progress (achievement of agreed goals, previous and current client needs); set new SMART goals.

LO4: Understand how to provide ongoing customer service to clients

Importance of client care: for the client (health and safety, maintain effective standards of service, personalised customer service); for the organisation (adhere to REPs Code of Conduct, follow duty of care, avoid negligence, adhere to law of tort, follow organisation requirements and procedures, maintain image and reputation).

Importance of dealing with clients' needs: maintain satisfaction of client; meet client needs; achieve client goals; maintain confidence and trust of client; promote client adherence and attendance; maintain professional and organisation image; positive word of mouth; potential increase in client base.

Sources of appropriate information to meet client needs: REPs code of Conduct; organisation's procedures; referral professionals (e.g. GP, physiotherapist, nutritionist); evidence based journals; evidence based websites; evidence based text books.

Importance of meeting clients' needs timely and effectively: maintain client satisfaction; optimise effectiveness of service; maintain customer loyalty; minimise risk of relapse or drop-out; maintain reputation and professional image.

Exceed customer expectations: customer needs analysis; provide service over and above what is expected; follow organisation's procedures; examples of exceeding expectations (level of personal attention and service, standard of exercise service provided, levels of personal communication experienced).

Handle client complaints positively: handle complaints (privately, positively, confidently, professionally, promptly, confidentially, showing empathy, with trust and respect, to clients' satisfaction), follow agreed procedures (organisation's operational procedures and good practice; REPs Code of Conduct).

Unit UV20523

Know how to support clients who take part in exercise and physical activity

Guidance on assessment

Internal assessment

This unit will be internally assessed and verified using the following assessment tools:

1. Portfolio of evidence:
    a. All assessment criteria must be evidenced.

Unit UV20523

Know how to support clients who take part in exercise and physical activity

Record of assessment

The learner will be guided in how to achieve the learning outcomes by their tutor or assessor, who will observe their practical work and assess their knowledge and understanding. All assessment criteria must be met with evidence clearly documented in the learner's portfolio.

Name of learner	VTCT number

AC	Knowledge requirements	Portfolio reference
Understand how to form effective working relationships with clients		
1.1	Explain why it's important to form effective working relationships with clients	
1.2	Explain why it's important to present oneself and the organisation positively to clients	
1.3	Describe how different communication skills can be used to assist clients with motivation	
1.4	Explain the importance of valuing equality and diversity when working with clients	
Understand how to address barriers to exercise / physical activity that clients experience		
2.1	Identify the typical barriers to exercise / physical activity that clients experience	
2.2	Explain how incorporating clients' exercise / physical activity preferences into their programme can strengthen motivation and adherence	
2.3	Describe different incentives and rewards that can strengthen clients' motivation and adherence	
2.4	Describe different strategies that can help clients overcome typical barriers to exercise / physical activity	
Understand how to support clients to adhere to exercise / physical activity		
3.1	Explain why it is important for a client to take personal responsibility for their own fitness and motivation	
3.2	Describe how to assist clients to develop their own strategy for motivation and adherence	
3.3	Identify different behaviour change approaches / strategies to encourage adherence to exercise and physical activity	
3.4	Describe how to set short, medium and long term SMART goals	
3.5	Describe how to review and revise short, medium and long term SMART goals	

Understand how to provide ongoing customer service to clients		
4.1	Explain the importance of client care both for the client and the organisation	
4.2	Explain why it is important to deal with client's needs to their satisfaction	
4.3	Identify where to source relevant and appropriate information to meet client's needs	
4.4	Explain the importance of dealing with any delay in meeting client's needs timely and effectively	
4.5	Give examples of how to exceed customer expectations, when appropriate	
4.6	Explain the importance of handling client complaints positively following an organisation's procedure	

All assessment criteria achieved for this unit		
Assessor signature	Assessor number	Date

Internal verification record (if applicable)		
Internal verifier signature	Internal verifier number	Date

Unit UV20524

Health, safety and welfare in a fitness environment

Unit aim

It is the aim of this unit to develop learners' knowledge and understanding of how to maintain health, safety and welfare in a fitness environment, including the safeguarding of children and vulnerable adults.

Level:	2
Credit value:	2
GLH:	16

Learning outcomes ***The learner will:***	**Assessment criteria** ***The learner can:***
LO1: Understand emergency procedures in a fitness environment	**AC1.1:** Identify the types of emergencies that may occur in a fitness environment **AC1.2:** Describe the roles that different staff and external services play during an emergency **AC1.3:** Explain the importance of following emergency procedures calmly and correctly **AC1.4:** Describe how to maintain the safety of people involved in typical emergencies, including children, older people and disabled people
LO2: Understand health and safety requirements in a fitness environment	**AC2.1:** Outline why health and safety is important in a fitness environment **AC2.2:** Identify the legal and regulatory requirements for health and safety relevant to working in a fitness environment **AC2.3:** Describe Duty of Care and professional role boundaries in relation to special population groups **AC2.4:** Identify the typical roles of individuals responsible for health and safety in a fitness organisation **AC2.5:** Describe the types of security procedures that may apply in a fitness environment **AC2.6:** Describe the key health and safety documents that are relevant in a fitness environment

LO3: Understand how to control risks in a fitness environment	**AC3.1:** Identify possible hazards in a fitness environment, relating to: • facilities • equipment • working practices, including lifting and handling of equipment • client behaviour • security • hygiene **AC3.2:** Describe how to risk assess the types of possible hazards in a fitness environment **AC3.3:** Describe how to control risks associated with hazards in a fitness environment **AC3.4:** Identify the appropriate person / position to contact within a fitness organisation when hazards and risks cannot be controlled personally
LO4: Understand how to safeguard children and vulnerable adults	**AC4.1:** Describe what is meant by safeguarding the welfare of children and vulnerable adults **AC4.2:** Describe the responsibilities and limitations of a fitness instructor in regard to safeguarding children and vulnerable adults **AC4.3:** Identify the types of abuse which an instructor may encounter: physical, emotional, neglect, bullying and sexual **AC4.4:** Identify possible signs of abuse: physical, emotional, neglect, bullying and sexual **AC4.5:** Describe a fitness organisation's policies and procedures in relation to safeguarding children and vulnerable adults, including typical reporting procedures **AC4.6:** Describe the procedures to follow to protect oneself from accusations of abuse **AC4.7:** Identify the statutory agencies responsible for safeguarding children and vulnerable adults **AC4.8:** Explain when it may be necessary to contact statutory agencies **AC4.9:** Describe how to maintain the confidentiality of information relating to possible abuse
Additional information about the unit	
Unit expiry date	31/12/2013

Details of the relationship between the unit and relevant national occupational standards	This unit is mapped to: National Occupational Standards - Instructing Physical Activity and Exercise (2009) and Instructing Exercise and Fitness (2009): • C22 - Promote health, safety and welfare in active leisure and recreation
Assessment requirements specified by a sector or regulatory body	This unit is internally assessed in accordance with the Level 3 Personal Training Assessment Strategy developed by SkillsActive. Please see the 'Guidance on assessment' chapter for further details.
Endorsement of the unit by a sector or other appropriate body	Approved by SkillsActive, the sector skills council for active leisure and learning.
QAN	T/600/9016

Unit UV20524
Health, safety and welfare in a fitness environment

Unit syllabus

All content in this section must be covered when delivering this unit.

LO1: Understand emergency procedures in a fitness environment

Types of emergencies: first aid (accidental injury, medical conditions); accident (using equipment, trips, slips, falls); fire (building, equipment, flammable products); missing person (child, disabled person, vulnerable adults).

Roles of staff and external services: instructor (deal with situation when it arises within limits of own responsibility, refer situation if necessary, report emergency); receptionist (contact emergency services, meet and direct emergency services to location); instructor or line manager (complete report form according to organisation requirements); paramedic (treat medical emergency); Police (investigate missing person); Fire Service (investigate, resolve and make safe fire emergency).

Importance of following emergency procedures: calmly and correctly; to ensure the emergency is resolved; to ensure the health and safety of all clients and staff; to ensure staff responsibilities are clearly allocated and followed; to ensure the emergency is reported and recorded.

Maintaining the safety of people: stop the fitness service; provide information to keep people informed; direct to a safe environment (other area, first aid room, fire assembly point); contact appropriate personnel (line manager, emergency services, parent or guardian, significant others).

LO2: Understand health and safety requirements in a fitness environment

Importance of health and safety: to protect clients and staff; to ensure provision of safe and effective equipment; to ensure safe and hygienic premises; to meet Health and Safety Executive and industry standards.

Legal and regulatory requirements: Health & Safety at Work; Disability Discrimination; Law of Tort; Occupiers Liability; REPS Code of Conduct; Employee and Public Liability Insurance; Control of Substances Hazardous to Health.

Duty of care and professional role boundaries: duty of care (ensure no unreasonable harm or loss, three criteria for negligence); greater duty of care with vulnerable adults (over 18 years and in need of community care services, mental or other disability, unable to care for self, potential for exploitation); greater duty of care with clients undergoing special physiological lifespan processes (ageing, childhood, antenatal, postnatal).

Professional role boundaries for special populations: unable to practice or advertise as a special populations instructor; unable to instruct special population clients on one to one or group basis; unable to plan a progressive and long term special population activity programme; health screened and asymptomatic special populations may be accommodated on an occasional basis within mainstream exercise sessions; clients must be informed of instructor role boundaries and given the choice to participate; instructors should obtain relevant qualifications if regularly working with special population clients; insurance policies must cover the instruction of special populations; other referral sources for maintaining professional role boundaries (Code of Ethics, REPS Code of Conduct, GP, Physiotherapist, first aider, line manager).

Roles of individuals in health and safety: role of instructor (equipment and facility checks, service and maintenance, completing and recording specific activity risk assessments, maintaining safe practice during exercise services); role of managers (monitor health and safety practice, review risk assessments, review organisational health and safety policy, update staff on health and safety policy); Health and Safety Executive (inspection and review of organisations health and safety procedures and practice).

Types of security procedures: controlled and recorded reception access / departure; CCTV coverage of public areas, entrances and exits; lockable storage for personal valuables; spot checks on clients; locked storage of maintenance and cleaning products; locked doors to areas with restricted public access; locked storage of client data records.

Key health and safety documents: organisation health and safety policy; risk assessment; accident report form; equipment and facility maintenance and service records.

LO3: Understand how to control risks in a fitness environment

Possible hazards: facilities (e.g. slippery or uneven floor surfaces, obstructed floor areas, fire); equipment (e.g. broken, improper technical use); working practices (e.g. inappropriate exercise type and intensity, improper exercise technique, lifting, handling); client behaviour (e.g. abuse); security (e.g. medical condition, unauthorised persons, theft); hygiene (e.g. cross-infection, contact with hazardous cleaning and maintenance products).

Risk assessment: visual inspection and appraisal of possible hazards; written completion of risk assessment form (hazards, harm potential, people affected, risk severity, risk frequency, risk rating, additional control measures).

Risk control: facilities (e.g. cleaning and maintenance schedule, appropriate activities, sufficient floor area, suitable client footwear, location of fire exits, location of fire extinguishers, serviced fire extinguishers, storage of flammable products, organisational procedure for fire emergency); equipment (e.g. service and maintenance schedule undertaken and recorded, out of order equipment clearly marked, correct technical instruction); working practices (e.g. correct technical instruction, appropriate exercise type and intensity, correct lifting and handling technique); client behaviour (e.g. rules and standards information); security (e.g. qualified first aider, replenished first aid kit, location of nearest first aid kit, organisational procedure for medical emergency, controlled reception access); hygiene (e.g. regular cleaning schedule, clothing guidelines for clients, client hygiene information).

Appropriate personnel: referral of hazards outside the limits of personal responsibility (line manager, organisation health and safety manager, external services, Health and Safety Executive).

LO4: Understand how to safeguard children and vulnerable adults

Safeguarding welfare: children and vulnerable adults; protecting from maltreatment; preventing impairment of health and development; ensuring provision of safe and effective care; ensuring optimum life chances.

Responsibilities and limitations: responsibility of fitness instructor (duty of care to safeguard children and adults during provision of service, refer suspected and reported abuse to the designated employee); limitations (refer but not deal with suspected or reported abuse).

Types of abuse: physical (e.g. hitting, shaking, throwing, poisoning, burning, drowning, suffocating, causing physical harm, forcing training and competition exceeding the capacity of the body, giving drugs to enhance performance or delay puberty); emotional (e.g. constant criticism, name-calling, sarcasm, bullying, under consistent pressure to perform to unrealistically high standards); neglect (e.g. not ensuring safety, exposure to undue cold or heat, exposure to unnecessary risk of injury); bullying (e.g. name-calling, insulted or verbally abused, being deliberately embarrassed and humiliated by others, being made to feel different, being lied about, being physically assaulted or threatened with violence, being ignored); sexual (e.g. forcing or enticing a person to take part in sexual activities, involving people in looking at, or in the production of, sexual online images, watching sexual activities, or encouraging people to behave in sexually inappropriate ways).

Possible signs of abuse: physical (e.g. unexplained recurrent injuries or burns, probable excuses or refusal to explain injuries, wearing clothes to cover injuries, refusal to undress for exercise, bald patches, chronic running away, fear of medical help or examination, self-destructive tendencies, aggression towards others, fear of physical contact); emotional (e.g. physical, mental and emotional development lags, sudden speech disorders, continual self-depreciation, overreaction to mistakes, extreme fear of any new situation, inappropriate response to pain, neurotic behaviour, extremes of passivity or aggression); neglect (e.g. constant hunger, poor personal hygiene, constant tiredness,

poor state of clothing, untreated medical problems, no social relationships, destructive tendencies); bullying (e.g. become withdrawn, start stammering, lack confidence, become distressed and anxious, stop eating, attempt or threaten suicide, have their possessions go missing, refuse to talk about problems, have unexplained bruises and cuts, begin to bully others, become aggressive and unreasonable); sexual (e.g. distracted, sudden mood swings, exhibits or mimics sexual behaviours, poor self body image, resists changing clothes, wetting and soiling accidents, self injury).

Policies, procedures and reporting procedures: for a specific fitness organisation (safeguarding children, safeguarding vulnerable adults, protection from accusations of abuse).

Statutory agencies: Social Services; Police; National Society for the Prevention of Cruelty to Children (NSPCC); Independent Safeguarding Authority (ISA); associated roles and responsibilities; when to contact statutory agencies (when abuse is suspected, when abuse has been reported).

Maintaining confidentiality: follow organisational procedures; refer to designated member of staff; use a safe and private place to discuss the issue; record and store details according to the Data Protection Act.

Unit UV20524

Health, safety and welfare in a fitness environment

Guidance on assessment

Internal assessment

This unit will be internally assessed and verified using the following assessment tools:

1) Portfolio of evidence:
    a. All assessment criteria must be evidenced.

Unit UV20524

Health, safety and welfare in a fitness environment

Record of assessment

The learner will be guided in how to achieve the learning outcomes by their tutor or assessor, who will observe their practical work and assess their knowledge and understanding. All assessment criteria must be met with evidence clearly documented in the learner's portfolio.

Name of learner	VTCT number

AC	Knowledge requirements	Portfolio reference
Understand emergency procedures in a fitness environment		
1.1	Identify the types of emergencies that may occur in a fitness environment	
1.2	Describe the roles that different staff and external services play during an emergency	
1.3	Explain the importance of following emergency procedures calmly and correctly	
1.4	Describe how to maintain the safety of people involved in typical emergencies, including children, older people and disabled people	
Understand health and safety requirements in a fitness environment		
2.1	Outline why health and safety is important in a fitness environment	
2.2	Identify the legal and regulatory requirements for health and safety relevant to working in a fitness environment	
2.3	Describe Duty of Care and professional role boundaries in relation to special population groups	
2.4	Identify the typical roles of individuals responsible for health and safety in a fitness organisation	
2.5	Describe the types of security procedures that may apply in a fitness environment	
2.6	Describe the key health and safety documents that are relevant in a fitness environment	
Understand how to control risks in a fitness environment		
3.1	Identify possible hazards in a fitness environment, relating to: • facilities • equipment • working practices, including lifting and handling of equipment • client behaviour • security • hygiene	
3.2	Describe how to risk assess the types of possible hazards in a fitness environment	

3.3	Describe how to control risks associated with hazards in a fitness environment	
3.4	Identify the appropriate person / position to contact within a fitness organisation when hazards and risks cannot be controlled personally	

Understand how to safeguard children and vulnerable adults

4.1	Describe what is meant by safeguarding the welfare of children and vulnerable adults	
4.2	Describe the responsibilities and limitations of a fitness instructor in regard to safeguarding children and vulnerable adults	
4.3	Identify the types of abuse which an instructor may encounter: physical, emotional, neglect, bullying and sexual	
4.4	Identify possible signs of abuse: physical, emotional, neglect, bullying and sexual	
4.5	Describe a fitness organisation's policies and procedures in relation to safeguarding children and vulnerable adults, including typical reporting procedures	
4.6	Describe the procedures to follow to protect oneself from accusations of abuse	
4.7	Identify the statutory agencies responsible for safeguarding children and vulnerable adults	
4.8	Explain when it may be necessary to contact statutory agencies	
4.9	Describe how to maintain the confidentiality of information relating to possible abuse	

All assessment criteria achieved for this unit		
Assessor signature	Assessor number	Date

Internal verification record (if applicable)		
Internal verifier signature	Internal verifier number	Date

Unit UV20528
Planning water-based exercise

Unit aim
It is the aim of this unit to develop learners' knowledge and understanding of the theoretical components underpinning group exercise to music (water-based) programmes for apparently healthy adults of all ages.

Level:	2
Credit value:	5
GLH:	26

Learning outcomes ***The learner will:***	**Assessment criteria** ***The learner can:***
LO1. Understand how to collect participant information to plan water-based exercise	**AC1.1** Explain the process of informed consent **AC1.2** Describe different methods to collect client information, to include: • questionnaire • interview • observation **AC1.3** Describe how to determine which method/s of collecting information are appropriate according to the individual **AC1.4** Explain the principles of screening clients prior to water-based exercise to include the use of the physical activity readiness questionnaire (PARQ)
L02. Understand how to use participant information to plan water-based exercise	**AC2.1** Describe the factors, based on client screening, which may affect safe exercise participation **AC2.2** Give example of how client information affects the planning of water-based exercise **AC2.3** Identify the reasons for temporary deferral of exercise **AC2.4** Explain the reasons for referring clients to other professionals

L03. Understand how to plan water-based exercise	**AC3.1** Describe how to plan water-based exercise to meet the needs of clients with different objectives **AC3.2** Identify a range of water-based exercises to develop: • cardio-vascular fitness • muscular fitness • flexibility • motor skills **AC3.3** Identify the range of equipment used in water-based sessions and their uses **AC3.4** Describe the correct preparation of the range of equipment used in water-based sessions **AC3.5** Describe how to plan water-based exercise using circuit formats
L04. Understand how to use music to enhance water-based exercise	**AC4.1** Describe how to select the speed and type of music for the participants and phase of the class **AC4.2** Describe the legal requirements covering the use of music **AC4.3** Describe the effect of pacing and speed of exercises in an aquatic environment
L05. Understand the particular features of the pool environment that affect session planning	**AC5.1** Describe the effect of the use of shallow and deep water when planning water-based sessions **AC5.2** Describe the importance of the following environmental factors when planning sessions: • water temperature and depth • humidity • air temperature **AC5.3** Describe the effects of thermoregulation on class structure **AC5.4** Identify the factors to consider when including non-swimmers in a session **AC5.5** Describe specific factors which can affect safety during water-based sessions **AC5.6** Describe how to plan the management of risks during water-based sessions
L06. Be able to plan safe and effective water-based exercise	**AC6.1** Identify objectives that are appropriate to:

	• the likely needs and potential of the participants • accepted good practice in the industry • own level of competence **AC6.2** Select water-based exercises that will help clients to develop: • cardiovascular fitness • muscular fitness • flexibility • motor skills **AC6.3** Plan safe and effective water-based exercise to achieve planned objectives for the session **AC6.4** Select a range of exercises that are safe and appropriate for participants and include possible alternatives **AC6.5** Include the use of music where appropriate to the sessions' objectives **AC6.6** Plan realistic timings and sequences **AC6.7** Record plans in an appropriate format
Unit expiry date	31/12/2013
Details of the relationship between the unit and relevant national occupational standards	This unit is mapped to: • Instructing exercise and fitness 2009 NOS (D455 – Plan and prepare water-based exercise)
Assessment requirements specified by a sector or regulatory body	This unit is internally assessed. Please see the 'Guidance on assessment' chapter for further details.
Endorsement of the unit by a sector or other appropriate body	Approved by SkillsActive, the sector skills council for active leisure and learning.
QAN	L/600/9023

Unit UV20528
Planning water-based exercise

Unit syllabus

All content in this section must be covered when delivering this unit.

LO1: Understand how to collect participant information

Process of informed consent: clarifying the purpose of the exercise session; explaining the physical and technical demands of the exercise session; outlining the activities included; clarifying the benefits and risks of the exercise session; explaining the meaning of informed consent to the client; providing the client with opportunity to reflect on verbal and written information provided; checking the client's understanding; providing the client with opportunity to make an informed decision about participation; recording signed consent; secure and confidential storage of written informed consent.

Methods of collecting information: client information (personal details, personal goals, lifestyle, medical history, physical activity history, current health status, physical activity preferences, barriers to participation); questionnaire (e.g. Physical Activity Readiness Questionnaire (PARQ), lifestyle, medical history); interview (formal, informal); observation (exercise technique, signs of exertion, posture); physical measurements (height, weight, Body Mass Index, blood pressure, waist to hip ratio, body fat percentage using bioelectrical impedance, other fitness tests to meet client needs).

Determining appropriate methods: based on client's specific needs; based on client's personality type and confidence; based on availability of time; based on availability of equipment and environment.

Principles of screening clients: to identify and refer individuals with medical contra-indications to exercise; to identify individuals at increased risk of disease due to age, symptoms, or risk factors; to identify individuals with clinically significant disease who should participate in a medically supervised exercise programme; to identify individuals with specific needs; to enable prescription of safe and effective exercise; to inform setting of objectives and goals.

LO2: Understand how to use participant information to plan water-based exercise

Factors affecting safe exercise participation: primary and secondary risk factors of coronary heart disease; medical conditions; medication; medical history; previous exercise history; fitness and skill level; current injury status; specific needs (e.g. age, disability, ante and postnatal); non-swimmers; fear of water.

Effect of client information on planning: modification of warm-up and cool-down (e.g. plan longer duration and a more gradual approach for older adults or lower fitness levels); modification of main exercises (e.g. plan increased exercise complexity and range of movement for higher fitness or skill levels); modification of exercise intensity (e.g. plan for higher repetitions and lower resistance for lower fitness levels, plan slower exercise speeds for lower skill levels, plan lower target heart rates for cardiovascular health); modification of programme variables to meet individual needs (e.g. frequency, intensity, duration, progression, overload).

Reasons for temporary deferral of exercise: minor illness (e.g. colds); minor injuries (e.g. muscle strain); excessive fatigue; inappropriate personal clothing and equipment.

Reasons for referring clients: identification of contra-indications and medical conditions (e.g. refer to GP, consultant); identification of injuries (e.g. refer to physiotherapist, sports therapist); when outside the limits of professional responsibility or competence at level 2 (e.g. refer to advanced instructor, specific populations instructor); to meet insurance requirements; to meet ethical and legal requirements (public liability, professional liability).

LO3: Understand how to plan water-based exercise

Planning water-based exercise: meet the needs of clients with different objectives (improve fitness, improve motivation, address barriers to participation, improve skills and techniques, improve health, fun and enjoyment); apply ACSM (American College of Sports Medicine) FITT guidelines (Frequency, Intensity, Time, Type); apply the principles and variables of training (adherence, overload, progression, adaptation, specificity, reversibility); warm up component (mobility, pulse raising, preparatory stretching (can be combined); aerobic component to include increasing heart rate, maintaining heart rate and lowering heart rate (aerobic curve); muscular strength and endurance component (muscle balance, exercise sequencing); cool down component (pulse lowering after cardiovascular training, maintenance stretching); incorporate a range of exercises to meet individual needs.

Exercises to develop cardiovascular fitness: a range of exercises and drills, use a combination of design techniques and sequences; speed of movement; lever length; change in direction; ROM; surface to water resistance; coordination; number of repetitions; jumping and leaping movements (rocking horse; leap frogs; tuck jumps; jumping jacks; jogging; treading water; pendulums); use the water to increase resistance and intensity.

Exercises to develop muscular fitness: use water to increase resistance and intensity; equipment (aqua mitts, hand weights, floats, paddles, woggles, buoyancy belts); water resistance to include rate, range, surface area and leverage; endurance (increased repetitions).

Exercises to develop flexibility: stretches - static, dynamic, developmental (pectorals, trapezius, latissimus dorsi, triceps, biceps, erector spinae, quadriceps, hamstrings, adductors, gluteals, gastrocnemius, soleus).

Exercises to develop motor skills: use of balance, use of coordination, use of speed, of power, use of agility, reaction time.

Equipment used in water-based exercise classes: aqua mitts, hand weights, floats, woggles, paddles, buoyancy belts.

Preparation of equipment: safety checks (straps, deterioration, tears, damage, mould).

Planning water-based exercise sessions using circuit formats: FITT (Frequency, Intensity, Time, Type); size and shape of the pool; space and equipment available; water depth and temperature; temperature of pool side; the number of participants; awareness of individual limitations (inability to swim and confidence in the water).

LO4: Understand how to use music to enhance water-based exercise

Selecting music: regular rhythm; strong beat; consider body composition; consider speed individuals are able to move; speed suitable to the selected exercises; participants' likes and dislikes; suitable for session objectives; suitable to the component (warm-up 120-130bpm, aerobic component 125-135bpm, resistance training 120-125bpm, cool-down stretching 110-125bpm); appropriate for the choreography; appropriate for background music.

Music legalities: law requires you to hold a music licence; legalities of use of music in public (PPL License, PRS, non copyright music, use of MP3 players).

Pacing and speed of exercises: buoyancy; body composition; eddy resistance (drag); viscous resistance; propulsion movements; hydrostatic pressure.

LO5: Understand the particular features of the pool environment that affect session planning

Shallow and deep water: deep water features; slower movements; more time for directional changes; reduced choreography; increased resistance; travelling more intense; increased buoyancy,

increased flotation; use buoyancy belts; impact forces reduced; unstable environment; increased hydrostatic pressure; not suitable for all participants (non-swimmers, pregnancy, respiratory problems); shallow water features; reduced buoyancy; reduced gravitational pull; increased speed of movement(s); increased choreography; increased directional changes; appropriate for (less confident participants, non-swimmers, pregnancy).

Environmental factors: water temperatures vary from pool to pool; swimming pool (26 – 27); leisure pool (29 – 30); children's pool (31 – 33); water depth; water level; humidity (1 degree higher than water temperature); air temperature (surrounding air temperature higher than the water).

Thermoregulation on class structure: time spent immersed in water; water temperature; air temperature; insulation (fat, muscle, body composition); mechanisms for heat loss (convection, conduction, evaporation).

Factors to include non-swimmers: less confident; suitable water depth; encouragement; work close to poolside; use equipment (woggle); appropriate choreography.

Factors affecting safety: size and shape of the pool; condition of poolside (instructor / participant); surface of the pool floor; the water depth (shallow, deep, constant, sloping); the water level (gap between water and poolside); air temperature; water temperature; equipment storage; use of electrical equipment (music); clothing; lack of continuous movement (standing still).

Planning the management of risks: identify rules / regulations; specific workings of the pool environment (different venues follow different procedures); nearest telephone; emergency buttons; fire exits; fire extinguishers; first aid kit; rescue equipment; water (depth, temperature, level); air temperature; condition of poolside.

LO6: Be able to plan safe and effective water-based exercise

Agree objectives with participants: participants (groups); objectives (improve fitness, improve motivation, address barriers to participation, improve skills and techniques, improve health, fun and enjoyment); appropriate to their needs and potential; appropriate to accepted good practice; appropriate to own level of competence; goals (short term, medium term, long term); SMART goals (specific, measureable, attainable, realistic, time phased); agreeing (use communication skills, consider participant preferences and needs, use negotiation skills, reach a mutual agreement).

Select exercises: to develop cardiovascular fitness (aerobic curve); to develop muscular fitness (MSE); to develop flexibility (cool down stretch); to develop motor skills (moves in different planes, intensities and levels).

Select a range of exercises and alternatives: timing; intensity; progressions; adaptations; alternatives (reflecting group requirements).

Minimise risks: client risks (medical condition); risks of activities planned with the clients (exercise causing injury); risks from other activities happening at the same time (e.g. injury from other individuals using equipment in close proximity); undertake a risk assessment; plan risk control measures (pre-exercise health screening, appropriate exercise selection / alternatives); safe exercise supervision (a lifeguard on poolside at all times).

Use of music where appropriate: motivating; effective; choreographed sessions; themed sessions; enhance the session (fun, interesting); dictate the pace of the session; assist planning; pool environment (poor acoustics).

Plan realistic timings and sequences: to meet participant objectives; to meet needs; appropriate for each component; for different exercises; appropriate to the environment; appropriate to the session type; appropriate for session duration.

Record programme plans: use a written programme / session card; record mobility, pulse raiser and stretch exercises (exercise name, reps, sets, duration, teaching points, alternatives), record details of aerobic curve exercises (exercise name, reps, teaching points, alternatives, adaptations); record MSE exercises (exercise name, sets, reps, equipment, intensities, teaching points, alternatives,

adaptations); record cool down activities (exercise name, reps, duration, teaching points, alternatives, adaptations); review client personal programmes regularly.

Unit UV20528
Planning water-based exercise

Guidance on assessment

Internal assessment

This unit will be internally assessed and verified using the following assessment tools:

1. Portfolio of evidence
   All assessment criteria must be evidenced

2. Evidence for AC- 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7 and ranges R1, R2, R3 can be presented in the form of a planning document based on information gathered which will form the basis of the practical session.

Unit UV20528
Planning water-based exercise

Record of assessment

The learner will be guided in how to achieve the learning outcomes by their tutor or assessor, who will observe their practical work and assess their knowledge and understanding. All assessment criteria must be met with evidence clearly documented in the learner's portfolio.

Name of learner	VTCT number

AC	Knowledge requirements	Portfolio reference
Understand how to collect participant information to plan water-based exercise		
1.1	Explain the process of informed consent	
1.2	Describe different methods to collect participant information, to include: • Questionnaire • Interview • observation	
1.3	Describe how to determine which method(s) of collecting information are appropriate according to the individual	
1.4	Explain the principles of screening clients prior to water-based exercise to include the use of the Physical Activity Readiness Questionnaire (PARQ)	
Understand how to use participant information to plan water-based exercise		
2.1	Describe the factors, based on client screening, which may affect safe exercise participation	
2.2	Give examples of how client information affects the planning of water-based exercise	
2.3	Identify the reasons for temporary deferral of exercise	
2.4	Explain the reasons for referring clients to other professionals	
Understand how to plan water-based exercise		
3.1	Describe how to plan water-based exercise to meet the needs of clients with different objectives	
3.1	Identify a range of water-based exercises, to develop: • cardiovascular fitness • muscular fitness • flexibility • motor skills	

3.3	Identify the range of equipment used in water-based sessions and their uses	
3.4	Describe the correct preparation of the range of equipment used in water-based sessions	
3.5	Describe how to plan water-based exercise using circuit formats	

Understand how to use music to enhance water-based exercise

4.1	Describe how to select the speed and type of music for the participants and phase of the class	
4.2	Describe the legal requirements covering the use of music	
4.3	Describe the effect of pacing and speed of exercises in an aquatic environment	

Understand the particular features of the pool environment that affect session planning

5.1	Describe the effect of the use of shallow and deep water when planning water-based sessions	
5.2	Describe the importance of the following environmental factors when planning sessions: • water temperature and depth • humidity • air temperature	
5.3	Describe the effects of thermoregulation on class structure	
5.4	Identify the factors to consider when including non-swimmers in a session	
5.5	Describe specific factors which can affect safety during water-based sessions	
5.6	Describe how to plan the management of risks during water-based sessions	

Be able to plan safe and effective water-based exercise

6.1	Identify objectives that are appropriate to: • the likely needs and potential of the participants • accepted good practice in the industry • own level of competence	
6.2	Select water-based exercises that will help clients to develop: • cardiovascular fitness • muscular fitness • flexibility • motor skills	
6.3	Plan safe and effective water-based exercise to achieve planned objectives for the session	
6.4	Select a range of exercises that are safe and appropriate for participants and include possible alternatives	

6.5	Include the use of music where appropriate to the session's objectives	
6.6	Plan realistic timings and sequences	
6.7	Record plans in an appropriate format	

Range

The ranges below indicate what learners must cover in their portfolios of evidence and practical observations. In simple terms, range statements indicate the elements that must be covered to achieve this unit. Assessors must ensure that learners have met the required range statements in addition to the unit's assessment criteria.

Planning ranges:

The learner must plan sessions for all the following environments:

R1	Session environment	Date of observation & Assessor initials	Portfolio reference
a	Shallow water		
b	Deep water		

The learner must plan for all of the following objectives:

R2	Objectives	Date of observation & Assessor initials	Portfolio reference
a	Improve fitness		
b	Improve motivation		
c	Address barriers to participation		
d	Improve skills and techniques		
e	Provide opportunities for fun and enjoyment		

The learner must identify hazards relating to:

R3	Objectives	Date of observation & Assessor initials	Portfolio reference
a	The client		
b	The activities you are planning		
c	Other activities happening at the same time		

All assessment criteria achieved for this unit		
Assessor signature	Assessor number	Date

Internal verification record (if applicable)		
Internal verifier signature	Internal verifier number	Date