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| **EQF Level 4 Personal Trainer****Core Knowledge & Skills Requirements****Mapping Toolkit** |

In this mapping toolkit you will find all the core knowledge and skills requirements which you will need to part-map your Assessed Personal Training training programme in order for it to be endorsed for recognition by REPs Ireland.

**Overview**

* Role of the PT
* Functional Anatomy
* Physiology
* Nutrition
* Psychosocial aspects of health & fitness
* Health & Fitness Assessment: collecting and analysing information
* Training adaptation & Exercise planning & programming
* Business and marketing skills for personal trainers.

**Core Knowledge Areas:**

1. **Role of the PT**
	1. Presentation
	2. Health Promotion
	3. Building a Plan and Deliver Personal Training
	4. Use Current Technology
2. **Functional Anatomy**
	1. Functional Kinesiology/Biomechanics
	2. Muscles
3. **Physiology**
	1. Energy Systems
	2. Cardiorespiratory System
	3. Nervous and Endocrine System
4. **Nutrition**
5. **Psychosocial Aspects of Health & Fitness**
6. **Health & Fitness Assessment: collecting and analysing information**
	1. Components of fitness
	2. Collecting and analysing information
7. **Training Adaptation and Exercise Planning and Programming**
	1. Training Adaptation
	2. Exercise Planning and programming
8. **Business and Marketing Skills for PTs**

*Acknowledgement: EuropeActive*

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**How to use this toolkit**

Using the righthand column, indicate where in your training materials the evaluator can see the relevant criteria evidenced. Use the third column to indicate the assessment method and materials used to assess the criteria, see example below:

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| **Content Summary and Learning Outcomes** | **Where can the evidence be found?** | **Where and how will it be assessed?** |
| **Learners should demonstrate knowledge and understanding of:**  |
| * 1. **Individual Instruction – Core Knowledge**
 |
| **2.1.1 Designing an Individual Fitness Programme**  |
| * The structure of an individual fitness programme, to include: Warm-up, Main activity, Cool down
 |  |  |
| * Designing an individual fitness programme
 | *Slide 9 of PowerPoint* | *Included in worksheet 2* |
| * The necessary skills of an effective and qualified fitness instructor.
 | *Slide 10 of PowerPoint* | *Not assessed* |
| **2.1.2 Delivering a Fitness Session** |
| * The national legal responsibilities of the fitness instructor
 |  |  |
| * How to identify status of participants relative to screening information
 |  |  |
| * How to identify any changes required (alternatives/adaptations), to planned activities
 |  |  |
| * Health & Safety checks to be made, relevant to the exercise environment
 | *Page 3 of the manual* | *Included in worksheet 4* |
| * The information needed to respond appropriately to a medical emergency
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| * How to provide an appropriate plan for the sessions.
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| **Content Summary and Learning Outcomes** | **Where can the evidence be found?** | **Where and how will it be assessed?** |
| **Learners should demonstrate knowledge and understanding of:**  |
| 1. **Role of the PT**
 |
| * 1. **Professionalism, Code of Practice/Ethics/National Standards and Guidelines**
 |
| * The ethical requirements that are intrinsic to the Personal Trainer role as stated in the EUROPEACTIVE and EREPS Code of Ethical Practice (for more information take level 3 or visit www.ereps.eu)
 |  |  |
| * Legal Guidelines and Professional Responsibilities (depending on each country’s legislation)
 |  |  |
| * The scope of legal responsibility of the personal trainer (It should cover safety and risk management, intellectual property and trademarks, doping and supplements - among other topics of interest.)
 |  |  |
| * The legal, financial and organisational issues related to running a self-employed business related to active leisure or fitness services
 |  |  |
| * The labour law, legal provisions on the protection of personal data, tax law and copyright law regarding the implementation of the training process in active leisure
 |  |  |
| **1.2 Presentation** |
| * Basic procedures to introduce him/herself to new clients
 |  |  |
| * General rules for customer care
 |  |  |
| * The basic principles of customer care to include perceived benefits
 |  |  |
| * The methods and practices, which contribute to effective customer care
 |  |  |
| * The skills of effective customer care: *communication, body language, negotiation*
 |  |  |
| **1.3 Health Promotion** |
| * The concepts of physical activity, exercise and sport (among others) in order to clarify and educate clients on the best wellness approach in all the aspects of their lifestyle
 |  |  |
| * The cardiovascular fitness, muscular strength and endurance, and flexibility related benefits of physical activity and the significance of these benefits in reducing risk of disease
 |  |  |
| * The current guidelines for health promotion, physical activity and wellness
 |  |  |
| * The current guidelines for structured exercise and physical fitness
 |  |  |
| * The barriers and motivators to exercise and physical activity participation and lifestyle change
 |  |  |
| * The exercise continuum for different levels of physical activity to include relative benefits
 |  |  |
| * The agencies involved in promoting physical activity for health at national and international level
 |  |  |
| * How to promote a healthy lifestyle regarding: nutrition, sleep, other opportunities for physical activity in everyday life (e.g., active commuting), stress management and the avoidance of smoking, excess sitting, excess alcohol and drugs
 |  |  |
| **1.4 Building a Plan and Deliver Personal Training** |
| * The principles that underpin personal training and how personal training differs from other types of physical activity instruction
 |  |  |
| * The difference between planning supervised and unsupervised activities and how to build these into a timetable of sessions
 |  |  |
| * The types of environment within which personal training may be delivered and how to make best use of these
 |  |  |
| * Specific health and safety issues relating to delivering personal training in an environment not designed for physical activity instruction
 |  |  |
| * How to improvise effective activities with the client according to the resources available
 |  |  |
| * The importance of maintaining frequent contact with the client, including between sessions
 |  |  |
| * The proactive role of the Personal Trainer regarding the adaptation process for each individual especially at the beginning of the training programme
 |  |  |
| * The importance of providing a proper dose response relationship according to the level of the individual
 |  |  |
| * The importance of a regular and planned communication strategy regarding the training adaptation process
 |  |  |
| * The need to refer to other health professionals such as a general practitioner, psychologist, physiotherapist, neuromuscular therapists, consultant, etc.
 |  |  |
| **1.5 Use current technology** |
| Use appropriate technological developments to help clients increase general activity levels and be motivated to adhere to exercise programmes - the learner should be able to:  |  |  |
| * Identify the main developments in technology relevant to the health and fitness industry
 |  |  |
| * Describe how technological innovation such as heart rate monitors, wearables and mobile phone applications can engage and support clients in maintaining recommended physical activity levels
 |  |  |
| * Describe how health and fitness technology can assist in and improve health and fitness assessments
 |  |  |
| * Use data to support the effective delivery of exercise programming and client engagement with programmes
 |  |  |
| * Explain how technology can promote client motivation and the achievement of personal goals
 |  |  |
| * Explain how to collect, record, monitor, analyse and interpret client data provided by current technological options
 |  |  |
| * Describe how to maintain legal, ethical and professional standards when working with new technologies and privacy of client data
 |  |  |
| * Use new technologies to offer a better service and to increase adherence to physical activity
 |  |  |
| * Identify the limitations and potential negative outcomes of using technology (e.g., clients focusing too much on reaching goals, burned calories, food and fitness trackers or competing with others and not resting when injured, etc.)
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| 1. **Functional Anatomy**
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| **Learners should demonstrate knowledge and understanding of:**  |
| **2.1 Functional Kinesiology/Biomechanics**  |
| * The body’s three anatomical axes and planes including the terms frontal (coronal), sagittal and transverse
 |  |  |
| * The classification of joints in the human body (fibrous, cartilaginous and synovial) focusing on their functional significance including examples of each type and sub-type of joint
 |  |  |
| * The importance of ensuring that movement at all joints is kept in the correct planes throughout exercise performance for the prevention of ligament strain and potential risk of injury (e.g., at shoulder joint, inappropriate biomechanics can place a strain on the rotator cuff muscles increasing risk of osteoligamentus injury)
 |  |  |
| * Stability and mobility within each type of joint
 |  |  |
| * Classification of bones – to include long, short, flat, irregular, sesamoid, relating structure to function
 |  |  |
| * Role of osteoblasts and osteoclasts, and mechanical and hormonal contribution to bone density
 |  |  |
| * Bone density and its relation to resistance training activities
 |  |  |
| * Long and short-term effects of exercise on bone to include osteoporosis
 |  |  |
| * Articulations and the joint movements possible. To include the following movement terms with examples: flexion, extension, hyper-extension, adduction, abduction, elevation, depression, protraction, retraction, lateral flexion, horizontal flexion and extension, plantarflexion, dorsiflexion, internal and external rotation, circumduction, pronation, supination, eversion and inversion
 |  |  |
| * The main bones and their implications for vital functions and movements
 |  |  |
| * The vertebral column: structure and function – role of spinal curves
 |  |  |
| * The importance of maintaining the correct degree of spinal curvature at the cervical, lumbar and thoracic vertebrae in relation to weight-bearing and biomechanical efficiency and for the effective transmission of stress, caused by impact, through the pelvic girdle, kinetic chain and muscular system
 |  |  |
| * Abnormal degrees of curvature in the spine (lordosis, kyphosis and scoliosis) and their importance to exercise safety and the design of appropriate activities
 |  |  |
| * The high risk of shoulder joint displacement and the increased scapular stabilising role of the surrounding synergistic musculature and ligaments
 |  |  |
| * Biomechanical implications of different centres of gravity in relation to posture and patterns of adiposity
 |  |  |
| * Open and closed chain kinetic movements with examples of each and consideration of their advantages and disadvantages.
 |  |  |
| **3.2 Muscles** |
| * The three types of muscle in the human body (skeletal, smooth, cardiac)
 |  |  |
| * The gross anatomy and structure of skeletal muscle and its connective tissue
 |  |  |
| * The connective tissue of muscle merging into tendons composed of regular collagenous filaments
 |  |  |
| * Muscle shape and fibre arrangement including directional forces and line of pull (uni-pennate, bi-pennate, multi-pennate)
 |  |  |
| * The role of proprioceptors of tendons
 |  |  |
| * The interaction between the contractile filaments of muscle (actin and myosin)
 |  |  |
| * The role of a motor unit (i.e., the nerve and the muscle fibers which it innervates) in providing an ‘action potential’ to create fine or coarse muscle control
 |  |  |
| * The structural features and characteristics of Type 1 (slow twitch) and Type 2A (fast twitch/intermediate) and Type 2B fibres and the implications of exercise intensity on the recruitment sequence of different motor unit types
 |  |  |
| * The different types of muscular contractions (concentric, eccentric, isometric, isotonic and isokinetic)
 |  |  |
| * The effect of each type of muscular contraction on training adaptations and the way muscles can be influenced by different training modalities (e.g., body position in relation to gravity, aqua workouts and partner work)
 |  |  |
| * The likely relationship between delayed onset muscular soreness (D.O.M.S.) and eccentric, concentric and isometric muscle work
 |  |  |
| * The major muscles of the body defining their starting points in terms of the bones they originate from (though in most cases NOT the exact anatomical part of the bone), the joints that they cross and the bones that they insert onto (finishing point)
 |  |  |
| * The joint actions as a result of muscular action
 |  |  |
| * A range of actions and activities, the agonists, antagonists, main synergists and fixators
 |  |  |
| * The functional role of abdominal muscles in synergy with other muscles of the trunk, rib cage, pelvis and vertebral column
 |  |  |
| * The role of muscles like the gluteus group, latissimus dorsi and the thoracolumbar fasciae
 |  |  |
| * The importance of correct involvement of the hip flexor muscles (iliopsoas) in core stability training
 |  |  |
| * The role played by the hip flexor muscles and pelvic floor in core training
 |  |  |
| * Short and long-term effects of exercise on muscles.
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| **3 Physiology** |
| **Learners should demonstrate knowledge and understanding of:**  |
| **3.1 Energy Systems**  |
| * The three energy systems used for the production of adenosine triphosphate (ATP) in working muscle - the alactic anaerobic phosphocreatine (PC) system, the anaerobic lactate system and the aerobic system
 |  |  |
| * The effect of the type of exercise, intensity, duration, fitness levels and nutritional level on the three energy systems
 |  |  |
| * The way to use the three energy systems in correlation with the goal of the client
 |  |  |
| * The way to use acute variables during training to recruit the different energy systems
 |  |  |
| * The terms aerobic and anaerobic threshold
 |  |  |
| * Effects of interval training and EPOC (excess post-exercise oxygen consumption) on the metabolism
 |  |  |
| * The ability of the body to burn fat throughout a range of intensities (not just low intensity), e.g., if the aerobic threshold is raised you can utilise fat more effectively at higher intensities
 |  |  |
| * The relationship between METs (metabolic equivalent) and kilocalories and the prediction of calorie expenditure based on body weight, exercise MET level and duration with examples of different activities and their MET values
 |  |  |
| * The methods of monitoring exercise intensity, to include: the talk test, the rate of perceived exertion (RPE) scales (6 to 20 or 0 to 10), heart rate monitoring (age- related and heart rate reserve), and the benefits and limitations of each method
 |  |  |
| * The use and amounts of energy nutrients at different intensities.
 |  |  |
| **3.2 Cardiorespiratory System**  |
| * The anatomy of the heart to include the names and location of the heart valves, the muscular component and the flow of blood through the heart
 |  |  |
| * The terms HR (heart rate), resting HR, HRmax, HR reference values for various populations, HR training zones
 |  |  |
| * The blood flow and blood pressure, reference values for various populations
 |  |  |
| * The cardiac cycle and the terms stroke volume8 and cardiac output9
 |  |  |
| * The structure, function and characteristics of arteries, arterioles, veins, venules and capillaries
 |  |  |
| * The short and long-term effects of physical activity on the cardiovascular system
 |  |  |
| * The effect of medications on the cardiovascular system and their impact on training
 |  |  |
| * The respiratory system: description and function
 |  |  |
| * The terms ventilatory pump, pulmonary ventilation (VE), ventilatory rate, ventilatory threshold, maximal oxygen consumption (VO2max)
 |  |  |
| * The relationship between the cardiovascular system and respiratory system and how regular physical activity impacts on this1
 |  |  |
| * The passage of inhaled air from the atmosphere to the cellular level and back to the lungs and atmosphere
 |  |  |
| * Healthy lifestyle choices and their positive effect on cardiorespiratory tissues, e.g., the effects of smoking or alcohol avoidance
 |  |  |
| * Short and long term effects of exercise on the cardiorespiratory system
 |  |  |
| * Coronary Heart Disease (CHD) and associated risk factors such as smoking, high blood pressure, high blood cholesterol, physical inactivity, diabetes mellitus, family history, age, stress, obesity.
 |  |  |
| **3.3 Nervous and Endocrine System**  |
| * The main functions of the nervous system
 |  |  |
| * The structure and roles of the Central (CNS) and Peripheral (PNS) Nervous Systems
 |  |  |
| * The main roles of the nervous system to include:
* Sensory input – monitoring events in and outside the body
* Interpretation – analysing data
* Motor output – response to incoming data
 |  |  |
| * The two parts of the nervous system – the Central Nervous System (CNS) incorporating the brain and spinal cord and the Peripheral Nervous System (PNS) consisting of all nerves extending from the spinal cord, to include:
 |  |  |
| * The role of the CNS in receiving input from the sense organs and receptors about the state of both the external and internal environment, collating all of the information and sending out messages via the motor neurons of the PNS to effectors (muscles and glands)
 |  |  |
| * The PNS and its divisions into somatic and autonomic branches
 |  |  |
| * The role of somatic and autonomic branches of the PNS in regulating the voluntary contraction of the skeletal muscles and the activity of internal organs such as the smooth (involuntary) muscles, cardiac muscle, and glands of the skin and viscera
 |  |  |
| * The somatic branch terminating at the neuromuscular junction and controlling movement under voluntary control
 |  |  |
| * The role of the Autonomic Nervous System (ANS) in controlling cardiac and smooth muscle, the endocrine glands that secrete hormones and other organs, thereby regulating their activity
 |  |  |
| * The role of the sympathetic and parasympathetic pathways of the ANS
 |  |  |
| * The two opposing branches (to include the neurotransmitters and receptors) and their roles, e.g., sympathetic nerves speed up responses (e.g., heart rate) and mobilise energy stores to get us ready for action; and parasympathetic nerves slow things down and are more active during periods of calm and relaxation
 |  |  |
| * The role of regular activity in enhancing hard wire neuromuscular connections and improving all of the features of motor fitness such as reaction times, balance, spatial awareness and coordination, etc.
 |  |  |
| * Hormonal responses to exercise and their catabolic and anabolic effects
 |  |  |
| * The link between exercise intensity and hormonal reactions for specific goals like weight loss, muscle building and wellness
 |  |  |
| * The role of cortisol and the side effects of excessive production.
 |  |  |
| **3.4 Nutrition**  |
| * The dietary role and common dietary sources for each of the six main nutrients (carbohydrate, fat, protein, vitamins, minerals, water)
 |  |  |
| * The balance between saturated and unsaturated fatty acid and its effects on health
 |  |  |
| * The importance of the right intake of essential fatty acids (Omega 3 and 6) and their effects on health
 |  |  |
| * The role of vitamins and minerals in cell metabolic process
 |  |  |
| * The role and desirable levels of total cholesterol, high density lipoproteins (HDL) and low density lipoproteins (LDL) in the body, including the total cholesterol/HDL ratio
 |  |  |
| * Examples of food items in each of the four basic food groups
 |  |  |
| * Examples of food items for vitamins and minerals intake
 |  |  |
| * The components of energy balance - basal metabolic rate, thermic effect of food and physical activity level
 |  |  |
| * Methods to estimate calorie requirement
 |  |  |
| * How to develop a healthy, balanced way of eating
 |  |  |
| * Healthy eating patterns
 |  |  |
| * How dietary intake influences health; how lack of micronutrients (vitamins and minerals) influences health
 |  |  |
| * Lifestyle advice, to include use of tobacco, alcohol, caffeine (current government guidelines)
 |  |  |
| * How some medical conditions (e.g., CHD, diabetes mellitus, obesity, osteoporosis) may be impacted by nutrition (general advice)
 |  |  |
| * Energy needs for different activities/sports/fitness plans
 |  |  |
| * The role of carbohydrate, fat and protein as fuels for aerobic and anaerobic exercise
 |  |  |
| * Safe and effective advice about eating patterns for weight (fat) loss/gain; energy balance; appropriate ‘weight’ loss goals
 |  |  |
| * Appropriate referral/advice organisations
 |  |  |
| * General knowledge of current weight-loss fads and popular diets
 |  |  |
| * Hydration and electrolyte consumption guidelines for physical activity
 |  |  |
| * General nutrition recommendations to support aerobic dominant, steady state exercise (60 min+)
 |  |  |
| * General nutritional recommendations to support higher intensity, lactate dominant, intermittent sports and activities (e.g. football, basketball, circuits, lactate intervals, cross fit, etc.)
 |  |  |
| * General nutritional recommendations to support short term, explosive (creatine phosphate dominant) sports and activities (e.g. volleyball, golf, athletic field events, max strength training, etc.)12
 |  |  |
| * The available legal ergogenic aids, i.e., sports drinks, protein shakes and caffeine.
 |  |  |
| **3.5 Psychosocial Aspect of Health and Fitness** |
| * The different underlying motives for exercise, and the concepts of internal and external motivation
 |  |  |
| * The psychosocial aspects of health and fitness which are influential to health and fitness-related behaviour and behaviour change, including motivators and barriers (e.g., perceptions about risks, benefits, personal capability, social acceptance, opportunities, resources, etc.)
 |  |  |
| * The selection of an appropriate behavioural goal and the suggested method to evaluate goal achievement for each stage of change
 |  |  |
| * Signs and symptoms of stress, the effects of stress on health and strategies for dealing with stress
 |  |  |
| * Building rapport:
* The importance of connecting with people: body language: posture – eye contact, facial expression, vocal tonality (tempo, intensity, voice inflection)
* Primacy effects: smiling, mimicking, etc.
* Using sensory communication (visual, auditory, kinaesthetic pattern) to improve communication and orientation of the client
* Developing “importance”, “confidence” and “readiness”
* Dealing with resistance to change
* Using open-ended question, reflecting answering, summarising
 |  |  |
| * Motivational strategies:
* The most appropriate and effective behaviour change strategies to enhance exercise and health behaviour change, based upon the individual client’s needs and barriers (e.g., goal setting, action planning, social support, problem solving, reinforcement strategies, self-monitoring, etc.)
* Using the sensory representational system (visual, auditory, kinesthetic) to optimise an individual’s training session
* Relapse prevention: planning, problem solving, identifying and changing negative thinking.
 |  |  |
| **3.6 Health and Fitness Assessment : Collecting and Analysing Information** |
| **3.6.1 Components of Fitness** |
| * The three different somatotypes (endomorphic, ectomorphic and mesomorphic) focusing on the implications of each body type for exercise capacity and the ability to alter body shape
 |  |  |
| * Anatomical and hormonal differences concerning males and females and their influence on safe, effective and appropriate physical activity
 |  |  |
| * The health and skill-related components of total fitness and their definitions (ACSM 2017) to include:
* Health-related: muscular strength, muscular endurance, cardiorespiratory endurance (heart and lungs), flexibility and body composition
* Skill-related: balance (static and dynamic), coordination, reaction time, power and agility.
 |  |  |
| **3.6.2 Collecting and Analysing Information** |
| * Appropriate information relevant to the ability to negotiate goals that are Specific, Measurable, Achievable, Realistic, Time bound to plan and carry out safe and effective programmes and, enable thorough evaluation of planning options
 |  |  |
| * Correct screening procedures for:
* Physical; previous and current level of activity and interests. Various forms of evaluation of current levels of all components of fitness - muscular strength, muscular endurance, cardio-pulmonary fitness, flexibility and motor skills (balance and coordination)
* Psychological; motivation to participate, perceived and actual barriers to participation, stage of readiness to participate and stated future goals and aspirations
* Medical; health history, current health status, particularly in relation to risk factors for heart disease, the identification of medical conditions that would necessitate medical clearance and past and present injuries and disabilities
* Lifestyle; work patterns, eating patterns, relevant personal circumstances, likes, dislikes and preferences for physical activity
 |  |  |
| * The screening process to identify: risk factors for coronary heart disease; factors that limit the ability to participate/achieve goals; those requiring a referral to an appropriate medical professional or other clinician or medically supervised exercise programme
 |  |  |
| * How to adapt basic programmes for participants with particular needs including: sedentary, over-trained, peak performer, sport specific performer.
 |  |  |
| * How to identify and refer to other professionals the participants with particular needs including: recovering from injury, obese, suffering from chronic disease, musculoskeletal disorders, etc.
 |  |  |
| * The importance, conditions, contraindications and own professional limitations in the use of medical questionnaires intended for qualified health personnel (medical clearance, psychological questionnaires, lifestyle questionnaires, etc.), advanced fitness assessments13, and contraindications and limitations for testing including termination criteria
 |  |  |
| * Appropriate use of:
* Informed consent
* Questionnaires: Physical Activity Readiness Questionnaire (PAR-Q+ 2017)14, lifestyle and behavioural questionnaires, etc.
* Fitness assessments: functional assessments (e.g., postural, movement, core, balance, and flexibility), and physical assessments (e.g., anthropometric measurements and body composition, cardiorespiratory fitness, muscular strength, power and endurance)
 |  |  |
| * Interval, fartlek principles and practical application
 |  |  |
| * The principles of training including specificity, progressive overload, reversibility, adaptability, individuality and recovery time
 |  |  |
| * The effects of health-related physical activities, to include resistance training (e.g., improved posture, reduced risk of joint and soft tissue injuries, increased bone density, improved neuromuscular efficiency, etc.), cardiorespiratory training (reduced risk of CHD, improved body composition, etc.) and range of motion training
 |  |  |
| * The principles of periodised training programmes in developing components of fitness
 |  |  |
| * The use of short, medium and long-term goals (micro, meso and macro-cycles)
 |  |  |
| * The use of volume vs. intensity through the periodisation stages
 |  |  |
| * The various methods of range of motion (flexibility) training, the advantages and disadvantages of each, including static, ballistic, dynamic and proprioceptive neuromuscular techniques (including myotatic) to facilitate increased range of motion
 |  |  |
| * The role of the muscle spindle cells and the Golgi tendon organs in these mechanisms (including myotatic reflexes, Contract-Relax-Antagonist-Contract)
 |  |  |
| * The current ACSM or other recognised international guidelines for developing the different components of fitness, emphasising the distinction between activity for health and exercise for health and fitness, from evidence-based information
 |  |  |
| * The importance of adequate rest phases between training loads and the signs and symptoms of overtraining
 |  |  |
| * The principles of exercise prescription - **F**requency **I**ntensity **T**ime **T**ype **V**olume **P**rogression - for health and skill-related components of fitness
 |  |  |
| * The importance of the quality of instruction in order to have clients understand the information, perform the exercises with proper technique, efficacy and safety, and increase their self-efficacy and motivation.
 |  |  |
| **3.7 Training Adaptation and Exercise Planning and Programming** |
| **3.7.1 Training Adaptation** |
| * The principles of adaptation and modification for each fitness component
 |  |  |
| * The continuum between muscular strength (predominantly type 2 fibres) and muscular endurance (type 1 fibres) and neuromuscular efficiency
 |  |  |
| * Muscular strength influenced by use of high resistance and low repetitions so that motor unit recruitment is maximised and contractile limits are reached
 |  |  |
| * Muscular endurance enhanced by lower resistance loads and higher repetitions resulting in the build-up of lactic acid and inducing inhibition of further muscle contraction
 |  |  |
| * Increased endurance capacity in muscles developed between exercise sessions by the acquisition of increased numbers of mitochondria, oxidative enzymes and capillaries leading to increased oxidative ability within muscles
 |  |  |
| * The repetition ranges for strength, power, endurance and muscle hypertrophy
 |  |  |
| * The range of heart rate training zone models (e.g., aerobic training zone, fitness zone) for developing aerobic and anaerobic capacity
 |  |  |
| **3.7.2 Exercise Planning and Programming** |
| * The principles of overload, specificity, progression and general adaptations and how they relate to exercise programming and a variety of individual wants, goals and needs
 |  |  |
| * The signs and symptoms of excessive effort that would indicate the need for a change of intensity
 |  |  |
| * The ability to select appropriate equipment and recognise correct exercise technique to include appropriate positioning and general safety considerations
 |  |  |
| * Training variables to include:
* Choice of exercises
* Intensity of exercises
* Sequence of exercises
* Resistance and number of repetitions
* Number of sets
* Rest between sets (recovery)
* Speed of movement
* Type of muscle contraction
* Duration of session
* Rest between sessions
* Volume of training
* Split routines
 |  |  |
| * The use of the above variables to develop strength, endurance, hypertrophy, speed, power
 |  |  |
| * The advantages and disadvantages of exercising at various intensities for: sedentary (untrained) experienced (trained), high performers (well trained)
 |  |  |
| * Calculations of repetition maximums (1RM – 10RM)
 |  |  |
| * Commonly used evidence-based resistance training systems to include:
* Single set training
* Circuit resistance training
* Basic sets
* Supersetting (agonist/antagonist)
* Supersetting 2 exercises for the same muscle
* Pyramid systems
* Forced repetitions
 |  |  |
| * Commonly used cardiorespiratory training systems to include:
* Interval
* Fartlek
* Aerobic
* Anaerobic
* Peripheral Heart Action training
 |  |  |
| * The suitability of each training system for the client, when fitness levels and goals are considered
 |  |  |
| * Safe and effective use of equipment
 |  |  |
| * The basic principles of progressive programming
 |  |  |
| * The reasons for using periodisation
 |  |  |
| * The basic principles of periodisation to include: the main two variables, volume and intensity
 |  |  |
| * Macrocycles (long-term), mesocycles (medium-term), microcycles (short-term)
 |  |  |
| * Teaching strategies to enhance individual performance
 |  |  |
| * Appropriate methods to adjust programmes to meet the changing needs and circumstances of clients
 |  |  |
| * Methods of monitoring exercise intensity to include:

Maximum heart rate formulae (Gellish et al., 2007)* Rate of Perceived Exertion (RPE) scales, both 6-20 and 1-10
* Metabolic equivalents (METs)
* Kilocalories per minute (Kcal/min)
* Visual assessment and verbal assessment (talk test)
 |  |  |
| * Understand own limitations and when to refer clients to other relevant professionals, e.g., exercise specialist, exercise physiologist, nutritionist, physiotherapist, medical professionals
 |  |  |
| **3.8 Business and Marketing Skills for Personal Trainers**  |
| *Demonstrate an understanding of:* |
| * The legal and other requirements for a self-employed Personal Trainer
 |  |  |
| * Budgeting and financial management in a personal training business
 |  |  |
| * The sales cycle
 |  |  |
| * Risk analysis
 |  |  |
| * Consumer behaviour and how it influences the buying decision
 |  |  |
| * How sales targets are calculated and used
 |  |  |
| * The employee-model and independent-contractor model
 |  |  |
| * The importance of the business plan and the marketing plan to achieve goals
 |  |  |
| * The importance of insurance requirements
 |  |  |
| *Demonstrate knowledge of:* |
| * How to set up and implement an effective marketing strategy for a personal training business
 |  |  |
| * How to start up a personal training business and the business planning and promotion process
 |  |  |
| * How to sell personal training, e.g., how to sell face-to-face; how to close a sale
 |  |  |
| * How to find and qualify sales leads
 |  |  |
| * Which are the most effective attracting and promoting tools and how to carry them out
 |  |  |
| * How to use information technology applications in the business planning process and to monitor and analyse business data
 |  |  |
| * How to use communication tools to achieve goals
 |  |  |
| * The one-to-one and the small group training-model
 |  |  |
| * How to improve client retention
 |  |  |
| * How to develop a SWOT18 analysis of their service
 |  |  |
| * The popular marketing activities in the field of sport for all
 |  |  |
| * The importance of developing a clear business brand that will appeal to target clientele and represent what the business stands for
 |  |  |
| * How to develop a suite of PT products and services that will appeal to target clientele and meet their needs
 |  |  |
| * The importance of a website in PT marketing
 |  |  |
| * How to leverage blogs/vlogs and social media technology in PT marketing
 |  |  |