

Review of Level 4 Personal Trainer standards

Key:

Proposed new inclusions to standards

Proposed removal from standards

III. EuropeActive Skills and Underpinning Knowledge for Personal Trainers (EQF Level 4) as part of the EuropeActive Learning Outcomes Framework

Specific Prerequisites

This chapter supports the EuropeActive Competence Framework and contains the essential Skills and Knowledge written as Learning Outcomes, based on job purposes, required to work as a Personal Trainer in the European Health and Fitness Sector at the EQF-Fitness Level 4, where EQF 3 Fitness Instructor knowledge is a pre-requisite.

All exercise professionals will require both basic core knowledge and specific knowledge related to the context in which they work and there are specific prerequisites before starting the EQF 4 qualification:

- It is assumed that the EQF Level 4 Personal Trainer will have acquired all knowledge required to work as a Basic Instructor as identified in the EuropeActive EQF Level 3 Fitness Instructor.

Personal Trainers are **not endorsed to:**

- Prescribe rehabilitation programmes (i.e., a Personal Trainer is not a Physical Therapist);
- Provide exercise testing and prescription for at-risk population (i.e., a Personal Trainer is not an Exercise Physiologist);
- Prescribe any kind of medication or supplements (i.e., a Personal Trainer is not a General Practitioner);
- Prescribe nutritional programmes (i.e., a Personal Trainer is not a Dietitian/Nutritionist);
- Diagnose any psychological disorders or mental health conditions (i.e., a Personal Trainer is not a Psychologist);
- Provide any kind of psychological counselling (i.e., a Personal Trainer is not a Psychologist / Wellness & Health Coach);
- Diagnose diseases, disabilities or other clinical conditions (i.e., a Personal Trainer is not a General Practitioner).

Introductory Information

What does level 4 means at EQF?

Level of the EQF	Knowledge is described as theoretical and/or factual.	Skills are described as cognitive (involving the use of logical, intuitive and creative thinking) and practical (involving manual dexterity and the use of methods, materials, tools and instruments).	Responsibility and autonomy is described as the ability of the learner to apply knowledge and skills autonomously and with responsibility
The learning outcomes relevant to Level 4 are	Factual and theoretical knowledge in broad contexts within a field of work or study	A range of cognitive and practical skills required to generate solutions to specific problems in a field of work or study	Exercise self-management within the guidelines of work or study contexts that are usually predictable, but are subject to change. Supervise the routine work of others, taking some responsibility for the evaluation and improvement of work or study activities.

What does level 4 mean at Fitness QF?

EQF Level	Occupation	EuropeActive Standards	Target Audience
Level 4	Personal Trainer	EuropeActive Level 4	Apparently healthy adult population

Occupational Title

Personal Trainer.

Job Purpose

Coach clients individually according to their fitness needs, through an agreed exercise/ physical activity plan and assist with behavioural change.

Occupational Description

A personal trainer's role includes designing, implementing and evaluating exercise/physical activity programmes for **apparently healthy and low risk adult populations** **a range of individual clients** by collecting and analyzing client information to ensure the effectiveness of personal exercise programmes. A personal trainer should also actively encourage potential clients/members to participate in and adhere to regular exercise/physical activity programmes, employing appropriate motivational strategies to achieve this.

Occupational Roles

The personal trainer should be able to:

1. Collect information relating to individual clients
2. Carry out fitness assessments to establish client fitness and skill level, **cooperating or referring to an exercise for health specialist, an exercise physiologist, or an allied health professional, as necessary, as required** by the scope of practice of PTs
3. Analyse information relating to individual clients, assess a client's skills and abilities and identify any specific risks associated with the training process, and if necessary, refer the client to a more appropriate professional
4. Identify, agree and review short, medium and long term goals to ensure the effectiveness of exercise programmes, referring to an exercise for health specialist, an exercise physiologist, or an allied health professional, as necessary, as required by the scope of practice of PTs
5. Provide a range of exercise programmes in accordance with the needs of the clients by applying principles of exercise programming
6. Make best use of the environment in which clients are exercising
7. Provide clients with accurate and basic information on the principles of nutrition and weight management, referring to a dietitian/nutritionist, as necessary, as required by the scope of practice of PTs
8. Develop and apply strategies to motivate clients to join and adhere to an exercise programme
9. Understand how current technology can help clients to stay motivated to adhere to physical activity guidelines and structured exercise programmes
10. Deliver good customer service and be a positive role model at all times and keep up to date with industry developments
11. Promote healthy activities and related strategies for daily living to clients/members
12. Make the appropriate decisions relating to clients and their programmes/goals and, where required, refer the client to a more appropriate professional
13. Work within the parameters given at **Level 4**, recognising the standards and professional limitations that this provides, referring to appropriate members of staff for guidance and support
14. **Market and sell personal training services effectively and set up and run a personal training business if they choose to be self-employed.**

Core Knowledge Areas and Skills Requirements

3.1 - Role of the PT

Section Overview

- Knowledge and understanding of the basic roles of the Exercise professional as a Personal Trainer, **within the health, fitness and wellness industry.**
- Knowledge and understanding of the principles that underpin personal training and how personal training differs from other types of physical activity/exercise instruction.

Section Headings

3.1.1 Professionalism, Code of Practice/Ethics/National Standards and Guidelines

Learners should demonstrate knowledge and understanding of:

- 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**
- **The legal, financial and organizational issues related to running a business related to sports 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**

3.1.2 Presentation

Learners should demonstrate knowledge and understanding of:

- 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*

3.1.3 Communication

Learners should demonstrate knowledge and understanding of:

- **The personal communication skills necessary to develop rapport in order to motivate individuals to begin exercise, adhere to exercise, and return to exercise early. (See also 3.5 Psychosocial aspects of health and fitness)**

3.1.4 Health Promotion

Learners should demonstrate knowledge and understanding of:

- The concepts of physical activity, exercise and sport in order to clarify and educate clients on the best wellness approach for all aspects of their lifestyle
- The cardiovascular, muscular and flexibility related benefits of physical activity and the significance of these benefits in reducing risk of disease
- The most updated exercise guidelines required for health benefits and fitness benefits
- The most updated exercise guidelines for health, well-being and physical fitness
- The barriers and motivators to exercise participation
- The exercise continuum for different levels of physical activity to include relative benefits
- The agencies involved in promoting activity for health at the 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), smoking avoidance, excess sitting, excess alcohol and drugs use

3.1.5 Plan and Deliver Personal Training

Learners should demonstrate knowledge and understanding of:

- 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 about 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 in each individual especially at the beginning of the training programme
- The importance of provide a proper dose response relationship according to the level of the individual
- The importance of regular and planned communication strategy regarding the training adaptation process.

3.1.6 Use current technology:

Learners should demonstrate knowledge and understanding of:

- The use of appropriate technological developments to help clients increase general activity levels and be motivated to adhere to exercise programmes
- The main developments in technology relevant to the health and fitness industry

- How technological innovation such as heart rate monitors, wearables and mobile phone applications can engage and support clients in maintaining recommended physical activity levels
- How health and fitness technology can assist in and improve health and fitness assessments
- The use of data to support the effective delivery of exercise programming and client engagement with programmes
- How technology can promote client motivation and the achievement of personal goals
- How to collect, record, monitor, analyse and interpret client data provided by current technological options
- How to maintain legal, ethical and professional standards when working with new technologies and client data
- The use of new technologies to offer a better service and to increase adherence to physical activity
- The limitations and potential negative outcomes of using technology (e.g., clients focusing too much on reaching their goals or competing with others and not resting when injured)

3.2 - Functional Anatomy

3.2.1 Functional Kinesiology/Biomechanics

Learners should demonstrate knowledge and understanding of:

- 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-types of joint
- The importance of ensuring that movement at all joints is kept in the correct planes throughout exercise performance for 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 osteoligamentous injury)
- Stability and movement 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 in 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, plantar flexion, dorsi-flexion, 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 curves

- The importance of maintaining the correct degree of spinal curvature at the cervical, lumbar and thoracic vertebra regarding weight-bearing and biomechanical efficiency and for the transmission of stress, caused by impact, through the pelvic girdle, kinetic chain and muscle synergies
- 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 increased scapular stabilising role of the surrounding synergistic musculature and ligaments
- The potential for sprains and ligamentous damage increased by excessive non-functional movement during activities, such as running
- The main structural and physiological characteristics and functions of the osseous connective tissues to include the periosteum, ligaments (dense regular collagenous/elastic fibres), joint capsule (dense irregular, elastic, collagenous), fasciae
- The structure of ligaments and their tensile strength related to fibre direction and their sensitivity to shearing forces and tearing
- Biomechanical principles of movement - to include 1st, 2nd and 3rd class levers with examples (e.g., calf raises for 2nd class lever and flexion of the elbow for 3rd class lever)
- 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 a consideration of their advantages and disadvantages.

3.2.2 Muscles

Learners should demonstrate knowledge and understanding of:

- The **three** types of muscle in the human body (skeletal, smooth, cardiac)
- The gross anatomy and structure of a 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 (actine and myosine)
- 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 course 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 of muscular soreness (D.O.M.S.) and both 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 on the trunk, rib cage, pelvis and vertebral column
- Role of muscles like gluteus and latissimus dorsi and thoraco-lumbar fasciae
- The importance of correct involvement of the hip flexor muscle, Iliopsoas in core stability training
- Role play by hip flexors muscles iliopsoas complex and pelvic floor in core training
- Short and long term effects of exercise on muscles.

3.3 - Physiology

3.3.1 Energy Systems

Learners should demonstrate knowledge and understanding of:

- The **three** energy systems used for the production of **adenosine triphosphate** (ATP) in working muscle - the alactic anaerobic phospho-creatine (PC) system, the anaerobic lactate system and the aerobic system
- The effect of the type of exercise, intensity, duration, fitness levels, nutritional level on the **three** energy systems
- The way to use the **three** energy systems in correlation to the goal of the client
- The way to use acute variables during training to create the different energy system
- The terms aerobic and anaerobic threshold
- Effects of interval training and EPOC (**excess post-exercise oxygen consumption**) effects 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 utilize 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.

3.3.2 Cardiorespiratory System

Learners should demonstrate knowledge and understanding of:

- The anatomy of the heart to include the names and location of the heart valves, muscular component and flow of blood through the heart

- The cardiac cycle and the terms stroke volume (amount of blood pumped per beat) and cardiac output (amount of blood pumped per minute = stroke volume x beats per minute)
- The structure, function and characteristics of arteries, arterioles, veins, venules and capillaries
- The **short and long term effects** of physical activity on cardiovascular system
- Understanding the effect of medication for the cardiovascular system and their impact on training
- The respiratory system: description and function
- The relationship between the cardiovascular system and respiratory system and how regular physical activity impacts them
- The passage of inhaled air from the atmosphere to cellular level and back to
- Healthy lifestyle choices and their positive effect on cardio respiratory tissues, e.g., the effects of smoking or alcohol consumption
- Short and long term effects of exercise on the cardiorespiratory system to include short term – increase in heart rate, increase in breathing rate, effects of building up of CO₂ (**carbon dioxide**) in bloodstream. Long term effects including increase in stroke volume, lower resting heart rate, reduced risk of heart disease, reduction of high blood pressure, improved blood cholesterol, reduction of body fat and increased every day function, etc.
- Coronary Heart Disease (**CHD**) and risk factors that can manipulate it such as smoking, high blood pressure, high blood cholesterol, physical inactivity, diabetes mellitus, family history, age, stress, obesity.

3.3.3 Nervous & Endocrine System

Learners should demonstrate knowledge and understanding of:

- The main responsibilities 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 Somatic branch terminating at the neuromuscular junction controlling movement under voluntary control
- The role of the Autonomic Nervous System in controlling cardiac and smooth muscle, the endocrine glands that secrete hormones and other organs, thereby regulating their activity
- 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. Parasympathetic nerves slow things down and are more active during periods of calm and relaxation

- Regular activity for the nervous system which enhanced hard wire neuromuscular connections and improves all of the features of motor fitness such as reaction times, balance, spatial awareness and coordination, etc.
- Description of hormonal response to exercise and their catabolic and anabolic role
- Link between type of exercise intensity and hormonal reaction for specific goals like weight loss programme, muscle building and wellness programme
- Role of cortisol and side effects of too high production.

3.4 - Nutrition

Learners should demonstrate knowledge and understanding of:

- The dietary role and common dietary sources for each of the six main nutrients (carbohydrate, fat, protein, vitamins, minerals, water)
- Balance between saturated and unsaturated fatty acid and effects on health
- The importance of right intake of essential fatty acids (Omega 3 and 6) and their effects on health
- The role of vitamins and minerals in cells 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 the energy balance basal metabolic rate, thermic effect of food, physical activity level
- Methods to estimate calories requirements
- 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 advices about eating pattern for weight (fat) loss/gain; energy balance; appropriate 'weight' loss goals
- Appropriate referral/advice organisations
- Analysis of current weight-loss fads and popular diets

3.5 - Psycho-social aspects of health & fitness

Learners should demonstrate knowledge and understanding of:

- The different underlying motives for exercise (internal & external motivation)
- The psychosocial aspects of health and fitness which are influential to health and fitness-related behavior and behavior change, including motivators and barriers (e.g., perceptions about risks, benefits, personal capability, social acceptance, opportunities, resources, etc.)
- The application of basic cognitive-behavioural intervention strategies, such as goal setting, cueing, action planning, problem solving, reinforcement strategies, and self-monitoring
- ~~Appropriate models for change such as the 'Prochaska & DiClemente' models and the characteristics of an individual at each stage and the appropriate interventions/strategies at each stage (e.g., decisional balance, self efficacy, fitness testing, stimulus control, reinforcement management & counter conditioning 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 (please refer to level 3)
- **Building rapport:**
 - The importance of connecting people: body language: posture – eye contact, facial expression, vocal tonality (tempo, intensity, voice inflection)
 - Primacy effects: smiling, mimicking...
 - Using sensory communication (visual, auditory, kinaesthetic pattern) to improve communication and orientation of the client
 - The use of open-ended questioning, reflecting answering
 - Developing "importance", "confidence" and "readiness"
 - Dealing with resistance to change
 - Using open-ended question, reflecting answering, summarizing
- ~~Motivational Interviewing:~~
 - ~~Developing "importance", "confidence" and "readiness"~~
 - ~~Dealing with resistance to change~~
 - ~~Using open ended question, reflecting answering, summarizing~~
 - ~~Technique of decisional balance sheet~~
 - ~~Removing barriers, problem solving and enhancing benefits of practicing physical activity~~
- **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.)
 - ~~Knowing about the different stages of change such as the trans-theoretical model (Prochaska and Di Clemente), being able to use basic strategies for different stage and the appropriate interventions/strategies at each stage (e.g., decisional balance, self efficacy, fitness testing, stimulus control, reinforcement management and counter conditioning, etc.)~~
 - Using the sensory representational system (visual, auditory, kinesthetic) to optimize an individual's training session

- Definition and practical examples of extrinsic and intrinsic reinforcement
- Relapse prevention: planning, problem solving, identifying and changing negative thinking.

3.6 - Health & Fitness Assessment: Collecting and Analysing Information

3.6.1 Components of Fitness

Learners should demonstrate knowledge and understanding of:

- The three different somatotypes (endomorph, ectomorph and mesomorph) focusing on the implications of each body type for exercise capacity and 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, cardio respiratory 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

Learners should demonstrate knowledge and understanding of:

- 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 to enable thorough evaluation of planning options
- Correct screening procedures for:
 - Physical; previous and current level of activity and interests. **Different 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 toward 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, obesity, etc.
- Appropriate understanding of:
 - Medical questionnaires: medical clearance, psychological questionnaires, lifestyle questionnaires, etc.
 - Contraindications and limitation for testing
 - Advanced fitness assessments
 - The need of referring to other health professionals such as the general practitioner, psychologist, physiotherapist, neuromuscular therapists, consultants, etc.
- Appropriate use of:
 - Medical questionnaires: Physical Activity Readiness Questionnaire (PAR-Q+ 2017), informed consent, lifestyle questionnaires, etc.
 - Fitness assessments: 1) Functional assessments: postural, movement, core, balance, and flexibility; 2) Physiological assessments: anthropometric measurements and body composition, cardiorespiratory fitness, muscular strength and endurance
 - Postural assessment – to include:
 - Optimal postural alignment
 - Postural deficiencies and postural deviations
 - Factors affecting posture
 - Posture and client health
 - Static and dynamic postural analysis
 - Selection of suitable assessments
 - Factors to assess
 - Limitations of Personal trainer
- Appropriate health and fitness assessments specific to the client needs.

3.7 - Training Adaptation & Exercise Planning & Programming

3.7.1 Training Adaptation

Learners should demonstrate knowledge and understanding of:

- 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
- 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 periodized 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 periodization 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 myotactic) to facilitate increased range of motion
- The role of the muscle spindle cells and the golgi tendon organs in these mechanisms (including myotactic reflexes, Contract Relax, Antagonist, Contract)
- The current ACSM or other recognized International guidelines for developing the different components of fitness, emphasizing the distinction between activity for health and exercise from evidence-based information (ACSM, 2014; 2017)
- The importance of adequate rest phases between training loads and the signs and symptoms of overtraining
- The principles of exercise prescription - Frequency Intensity Time Type Volume Progression - for health and skill related components of fitness.

3.7.2 Exercise Planning & Programming

Learners should demonstrate knowledge and understanding of:

- 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 a change of intensity
- The ability to recognize correct exercise technique to include appropriate positioning, correct settings for cardiofitness machines and general safety considerations
- The ability to modify exercises appropriate to a variety of individual needs
- Training variables to include:
 - Choice of exercises
 - Sequence of exercise
 - Resistance and 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 resistance training systems evidence-based to include:
 - Single set training
 - Circuit resistance training
 - Basic sets
 - Super setting (agonist/antagonist)
 - Super setting 2 exercises for same muscle
 - Pyramid systems
 - Forced repetitions
- Commonly used cardiorespiratory training systems to include:
 - Interval
 - Fartlek
 - Aerobic
 - Anaerobic
 - Peripheral Heart Flow 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 periodization
- The basic principles of periodization to include: the main two variables, volume and intensity
- Macrocycles (long term), Mesocycle (medium term), Microcycles (short term)
- Teaching strategies to enhance the 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 the 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

Learners should demonstrate 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

Learners should 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 use them
- 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 SWOT analysis of their service
- The popular marketing activities in the field of sport for all

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