

Unit D2: Personal Trainer Skills Development

Level: **3**

Unit type: **Internal**

Guided learning hours: **180**

You can click in this box to go to the introductory section for our delivery guide. This provides an overview of:

- **The BTEC National Sport (2019) qualification suite, including the four pathways and links to occupational standards**
- **Employer engagement**
- **Incorporating Blended Learning**
- **Our support offer**

Approaching the unit

In this unit, learners will explore the anatomy and physiology of the main body systems involved in participation in regular exercise and how they respond to exercise both in the short- and long term. Learners will gain a practical and theoretical understanding of the range of health screening methods used to check the health of clients with different needs. They will also explore the different types of exercises for different components of fitness and how these exercises can be performed safely and with the correct technique.

Learners will explore ways to plan a personal training exercise session, taking into account the client's needs and how the session can be adapted to meet different needs. They will practically learn how to instruct a safe and effective personal training session and how to review their sessions and get feedback from their clients.

The knowledge and skills this unit gives learners an engaging combination of theory and applied aspects to give them an improved understanding and practical experience of personal training.

Access to a gym containing free weights, fixed resistance weights and cardiovascular equipment is essential as learners will need to explore how to support clients to use each type of equipment safely and effectively.

Delivering the learning aims

Learning aim A

Learning aim A focuses on the effects of exercise and sports performance on the main body systems. This content is essential for all personal trainers as this knowledge could be used on a daily basis. Where possible, practical delivery to support applied learning is encouraged for this learning aim as the content is scientific and contains new technical terminology which can be challenging for learners.

This content does build on the knowledge and skills from unit C2 with a more in-depth study of each of the systems and an introduction to the endocrine system.

Skeletal system

The structure of bone including the different types of bone and areas of bone are included in this unit. In addition, joint stability including passive and active structures, shock absorption and ligaments in joints are also included in this unit.

Muscular System

A wider range of muscles including their origins and actions are included – rotator cuff, shoulder girdle, spinal extensors, hip flexors together with the groups of muscles in the hip flexors, adductors, abductors, abdominals, hamstrings, and quadriceps. The core and pelvic muscles are also introduced.

The roles of muscles in terms of agonist, antagonist, synergist, and fixator are also introduced which are important for learning about muscles involved in different types of resistance-based exercises.

The sliding filament theory is also covered which is a challenging concept for many learners. The stretch reflex and reverse stretch reflex are also included.

Effect of muscle contraction and movements on joints related to injuries from overuse, the effect of overuse and misuses are also covered.

Cardiorespiratory system

Cardiac cycle, stroke volume are new concepts covered in this unit.

Nervous system

A number of new concepts are introduced in this unit including the peripheral nervous system, sensory input, neurones, motor units, proprioceptors, motor unit recruitment, inter and intramuscular coordination.

Endocrine system

All this content is introduced for the first time having not been covered in C2.

Biomechanics in Personal training

All this content is introduced for the first time having not been covered in C2

To help learners develop their knowledge of the body systems, a useful strategy might be to organise a trip to a university, science laboratory or museum. A

subsequent group presentation with worksheets and tasks to follow is also another successful means of engaging learners.

Guest lecturers such as personal trainers can be invited to explore real-life examples of using anatomy and physiology on a daily basis. These speakers can also give first-hand knowledge of the importance of understanding anatomy and physiology, and answer questions from learners.

Learning aim B

This learning aim focuses on the customer and how to screen customers prior to them taking part in an exercise programme as well as how to support and form working relationships with them to help to improve customers participation in regular exercise.

Some learners may have already had the experience of taking part in screening processes themselves if they are members of a gym. For learners that have not had this experience, a trip to a gym and experiencing a screening process through lifestyle questionnaires and health assessments will help to showcase how the process is carried out so that learners can gain tips from professionals as well as experience what it is like to be a customer with various potential concerns about the process to help to support their own approach to customer care. Having a fitness professional talk to learners about the importance of screening clients and how they go about doing this in order to maximise customer satisfaction would also be a potential approach to this content area. They can also provide examples of screening questionnaires as well as giving simulated interviews with members of the class so that everyone can see what the process involves.

The lifestyle factors underpinning a client's health and wellbeing and their approach to physical activity can be understood by looking at case studies and learners can research and then present the various methods available to improve client lifestyle change

Learning aim C

For this learning aim, learners should be engaged in practical activities based primarily in a gym environment combined with some theoretical delivery and consolidation on designing personal training programmes to address specific components of fitness, adhering to the principles of training.

Learners will need to be able to participate in and learn the training methods listed in the unit content.

Once learners are confident on how to use and instruct clients on all of the gym equipment it would be helpful if learners could work with participants who are not their peers or who are not being taught this unit. This will help them to learn to correct people and to spot incorrect techniques, as well as learning appropriate methods for optimal client engagement in preparation for their assessment.

Learning aim D

For this learning aim, learners should be engaged in planning and practical instruction of a personal training session. It would be a good idea for learners to work in pairs initially to take it in turns to deliver parts of a personal training session to each other. They can then start to populate a session plan for a personal training programme for a given client.

Once learners have had experience and gained confidence working with a peer it would be helpful if they can then work with participants who are not their peers or who are not being taught this unit. This will help them learn to instruct and demonstrate accurately,

as well as learning appropriate methods for optimal client engagement.

Learners will need access to an appropriately equipped location for the delivery and assessment of this unit, together with a willing participant to instruct in the summative assessment.

The instruction sessions could be visually recorded so that learners can see how they performed in the delivery of the session. They can also check if there are areas on which they could improve.

Learners should also be taught ways in which they can request feedback from the participant to find out if the training methods and training style was appropriate in terms of their needs, timing, motivation and teaching points.

Transferable skills

Preparing for work

- Working with clients
- Customer service skills
- Planning exercise programmes
- Health and safety in a gym environment

Developing practical and technical skills

- Leading a gym session.
- Delivering an induction to a gym.
- Reviewing a client's practical performance
- Reviewing own performance
- Displaying appropriate skills and behaviours.
- Applying knowledge to real-life situations.
- Job roles, responsibilities and ways of working.

Legislation, regulations, policies and procedures

- Health and safety
- Equality and diversity.

Managing information

- Problem solving.
- Management of information.
- Self-management and development.

Key teaching areas in this unit include:		
Sector skills	Knowledge	Transferable skills / behaviours
• Communication / consultation processes • Organisation/preparation • Planning • Application of key knowledge • Reviewing/evaluating for future progress	• Anatomy and physiology • Client demographics and its impact on leisure choices • Engaging with customers • Using customer feedback to improve client experience • Safe methods of cleaning a fitness facility • Risk stratification and behaviour change	• Communication • Working with others • Thinking skills / adaptability • Problem solving • Management of information • Self-management and development

Employer involvement

This unit would benefit from employer involvement in the form of:

- Visits to health and fitness centres where personal trainers work
- Work placement or shadowing where learners can sit in on zoom calls within a health and fitness environment
- Industry practitioners (face to face or virtually) can be used as expert witnesses who can help with areas of assessment with guidance from the teacher or can be used to make up a panel of experts when learners deliver presentations
- Industry practitioners (face to face or virtually) could be used to deliver masterclasses in their areas of expertise

Assessment guidance

These are only suggestions, and assessor can utilise professional judgment, to support this please consider the selection cited within' key summary of the types of evidence used for BTEC Nationals' in Appendix 1 of the spec. Where unsure on use or considering different method utilise the 'ask the expert service'.

This unit is internally assessed. Learners will be required to produce three assignments. There is a maximum number of three summative assignments for this unit.

The relationship of the learning aims and criteria is:

Learning aim: A (A.P1, A.P2, A.P3, A.M1, A.D1)

Learning aims: B and C (B.P4, B.P5, B.M2, C.P6, C.P7, C.M3, BC.D2)

Learning aims: D (D.P8, D.P9, D.M4, D.D3)

Example assessment strategies

This unit is internally assessed. There is a maximum number of three summative assignments for this unit.

Learning aim A

It is suggested that learning aim A is assessed via a written report that demonstrates understanding of each body system, their response to acute and chronic exercise, and the principles and applications of biomechanics in personal training.

Learning aims B and C requires Visual/audio evidence of learners carrying out screening processes with a client and a written report focusing on screening activity results, factors affecting safe exercise participation and when to refer clients. Exercise and health recommendations, based on the results and factors, supported by evidence, of completed lifestyle screening activities. A written report that compares different types of training for specific components of fitness and how they can be adapted to meet the needs of specific clients. Personal training programme for two contrasting clients.

Learning aim D can be assessed through visual/audio evidence of learners instructing a personal training session. The session plan and an evaluative report of own performance and the client's performance must be evidenced.

Delivering the unit: suggested activities

This provides you with a starting place for one way of delivering the unit, based around the recommended assessment approach in the specification.

Digital solution available

Aligned directly to support this unit [Sport 2019+](#)

Unit D2: Personal Training Skills Development	Modules	Features
	9 modules	Check your learning (formative assignment)
	155 topics	1 End of module summary (reflection)
		1 End of module assessment (Summative style)

Learning aims / topic areas	Suggested Activity	Suggested time allocation
A1 Musculoskeletal system	This system can be introduced through visual, diagrammatic activities and/or practical labelling exercises on a life-size skeleton, muscle chart or each other. Learners need to know about the bones within the axial and appendicular skeletons, location and types of synovial joint. Formal delivery on the structure of bones, bone growth and joint stability will further add to this knowledge and where possible it is advised to link this knowledge to exercise-related activities. The movements available at joints can be brought alive by accessing websites and apps with 3D imagery. Learners can use slow motion video analysis of themselves performing simple bodyweight exercises, which include the movements listed in the unit content. This will assist in securing the description of each movement and which joint the movement can occur at. It is important that learners know the origins and insertions of each of the muscles	5

	listed in the unit content so that they can understand the actions each muscle carried out. This helps to inform the process of determining which exercises to include to train specific muscles for sports or health related fitness. location of the major muscles, as per unit content. It would be beneficial to invite a physiotherapist in as a guest speaker and brief them to share with learners the effect weight bearing and non-weight bearing exercise has on the musculoskeletal and nervous systems.	
A2 Cardiorespiratory system	Introduce this topic with activity labelling the structures of the heart and lungs. Follow this with a class discussion and tutor-directed questions. Formal delivery of the functions of the cardiorespiratory system could be used supported by tutor-directed Q&A. Learners can be given a topic area to research and then use 'marketplace learning': individually or in groups, learners research to become knowledgeable in a function. In the structure of a marketplace, learners then walk among the different 'stalls' to share learning and content. In pairs or small groups, learners can create a storyboard of pictures to explain the cardiac cycle. Learners should then present back to the class and keep their work as a revision aid. Case studies can be used to demonstrate responses of the cardiorespiratory system to a single sport or exercise session. Direct learners to depict responses and explain/justify why they are occurring, and feedback to the rest of the class. To demonstrate the responses of the respiratory system to exercise, you could allocate one key response to groups and ask them to create a presentation to deliver to the rest of the class.	5

A3 Energy systems	Using bottle tops and straws or cones and relay batons is an active method to demonstrate the breakdown of ATP to create energy. One large bottle top/cone represents the adenosine molecule, with a further three bottle tops/smaller cones available to represent the role of phosphate molecules. Straws/toothpicks/relay batons represent the energy bonds and learners can move the implements or walk through them to show the breaking of an energy bond to release immediate energy. This can be developed in the phosphocreatine system and demonstrated with additional equipment. Sport and exercise images can be used to develop knowledge of the energy systems. Learners need to be able to apply an energy system to a sport or exercise, working mainly on the key terms; intensity and duration. This application will develop an understanding of the energy system continuum.	5
A4 Nervous System	Use a video of the digestive system to formally introduce learners to key processes and structures in the digestive system. Use a follow-up discussion to make sure that all learners agree on the definitions for the keywords and understand the processes in the digestive system. Learners label a diagram of the digestive system and research the function of each part. Learners are each given a macronutrient or a meal and carry out research to find out how long it takes to digest. Whole group feedback to compile an overview of timescales for digesting macronutrients and different macronutrients in a meal.	5
A5 Endocrine system	Learners will need to be taught what a hormone and gland are and how they function to act on target organs. Learners could work in small groups to become knowledgeable of a hormone or a gland. In the structure of a marketplace, learners then walk among the different 'stalls' to share learning and content on the endocrine system.	5

A6 Biomechanics in personal training	Biomechanics in personal training can be introduced by the lever systems used in a bicep curl, triceps extension and calf raise. Learners will need to develop an appreciation of how the length of the lever and change in the effort arm affects the intensity of the exercise and how lever length can be changed to regress or progress an exercise. The concepts of gravity, centre of gravity, momentum, force and kinetic chain can all be tutor-led, delivered by slow motion video analysis of exercises such as the deadlift or kettlebell swing. Learners could take part in a Pilates exercise session to help them to understand the effect of exercise on core stability and posture. Learners can prepare questions and request a debrief with the instructor on how biomechanics influenced their training to become a qualified instructor.	5
B1 Factors that affect client health and wellbeing	Learners can be given an overview of some of the key health conditions their clients may be suffering from so they are aware of the condition and the contraindications associated with it. Learners are then placed in pairs or small groups and allocated a lifestyle factor as per the unit content. They plan and deliver a presentation on that factor. The choice of presentation format is with the learner and it needs to focus on how that factor can affect health and wellbeing and the benefits regular exercise would have on that lifestyle factor.	10
B2 Health conditions and client screening methods	Learners work in pairs and consider what personal information is required from participants when they are about to start a physical activity programme. Invite personal trainers to talk to the learners about working in the industry and the importance of screening clients before participation. Hold a class discussion on what sort of information should be included in the new client screening process and to determine a participant's needs for a physical activity	10

	programme. Organise visits to health and fitness clubs to see and experience a health screening process to find out how it is carried out in the industry, as well as see the types of questionnaires that are used in screening. Hold class discussions on the importance of temporary deferral of exercise highlighted in the client consultation as well as temporary/immediate deferral situations). Alternatively, the tutor could prepare simulated situations that include issues that would result in the deferment of exercise, these can be given out at random. Learners must explore what steps would need to be taken for each situation highlighted, including the most appropriate person to refer the client to, and likely outcomes.	
B3 Strategies to encourage long-term positive lifestyle practice	Learners need to be able to understand the psychology linked to behaviour change and be able to adhere to exercise. This can then lead to a discussion on the interventions that can be used by personal trainers to support clients to adhere to regular exercise.	10
C1 Personal training methods for cardiovascular endurance	Learners should have access to the full range of types of cardiovascular exercise equipment in the unit content and be shown how to use it. They should then perform the exercise for a period of time to gain experience of how the exercise feels and how to increase and decrease the intensity. Each learner can then instruct a peer how to use the equipment safely, taking into account the correct positioning and intensity for that person. It is recommended that each of the different training methods are applied to different locations, including the gym, outdoors and using outdoor park equipment where available.	10

C2 Personal training methods for muscular strength	Learners should have access to the full range of types of muscular strength related exercise equipment in the unit content and be shown how to use it. They should then perform the range of exercises for a period of time to gain experience of how the exercises feel and how to increase and decrease the intensity. Each learner can then instruct a peer how to use the different types of equipment and perform the required lifts safely, taking into account the correct positioning and intensity for that person. It is recommended that each of the different training methods are applied to different locations, including the gym, outdoors and using outdoor park equipment where available.	10
C3 Personal training methods for muscular endurance	Learners should have access to the full range of types of muscular endurance related exercise equipment and bodyweight exercises in the unit content and be shown how to use it or complete the exercise appropriately. They should then perform the range of exercises for a period of time to gain experience of how each exercise feels and how to increase and decrease the intensity. Each learner can then instruct a peer how to use the different types of equipment and perform the required lifts safely, taking into account the correct positioning and intensity for that person. It is recommended that each of the different training methods are applied to different locations, including the gym, outdoors and using outdoor park equipment where available.	10

C4 Personal training methods for flexibility	Learners should learn about the different types of flexibility training methods and how to perform each type of stretch for different muscles in the body. They should then perform the range of flexibility exercises for a period of time to gain experience of how each exercise feels and how to increase and decrease the intensity. Each learner can then instruct a peer how to perform each stretch safely, taking into account the correct positioning for that person. It is recommended that each of the different training methods are applied to different locations, including the gym, outdoors and using outdoor park equipment where available.	10
C5 Personal training methods for functional exercise	Learners should learn about the different types of functional training methods and how to perform each type of exercise. They should then perform the range of functional exercises for a period of time to gain experience of how each exercise feels and how to increase and decrease the intensity. Each learner can then instruct a peer how to perform each functional exercise safely, taking into account the correct positioning for that person. It is recommended that each of the different training methods are applied to different locations, including the gym, outdoors and using outdoor park equipment where available.	10
C6 Designing personal training programmes	The use of RPE and the calculation of training zones for establishing intensity of training will need to be covered in theory followed by practical application – for example, learners could monitor the heart rate of a peer as they are on a treadmill using the heart rate monitors available on the treadmill or using a heart monitor if the equipment does not provide this option. They can then work out the right training zone for their peer-based on their identified needs. Learners should also know how to complete a 1RM and 10RM assessment in order to	10

	work out the intensity of resistance training for strength or endurance. The needs of different types of clients, principles of training and how to adapt exercises or programmes using FITT will be discussed with the tutor using Q&A. Learners can then be given a session plan with the headings: Participants (e.g. size of group, age, ability/level of performance, individual needs) – Location (e.g. community hall/small indoor space, outdoor grass) – Equipment (e.g. basic equipment, complex, specialist equipment) – Aims and outcomes – Activities/exercises – Intensity – Adaptations. Learners then complete the session plans for different types of participants to show they have considered the necessary adaptations and application of FITT. In conclusion, learners are equipped with a variety of session plans.	
D1 Planning a personal training session	This part of the unit will primarily involve practical delivery, as learners should be able to have experience of instructing a personal training session with a client. Learners can work in pairs to plan a gym-based practical session. The pairs can then feedback on their findings to the rest of the group to highlight strengths and areas for improvement. The plan should include the following: Welcome clients, advise clients of the facilities, equipment, emergency procedures. Check client's ability and any medical conditions Warm up clients. Introduce equipment – physical and technical demands of each exercise and the purpose. Demonstrations	10

	How to Select appropriate intensity for a client to use the equipment How to adapt the intensity to suit the client's needs. Teaching points for each piece of equipment Cool down.	
D2 Instructing a personal training session	Learners take it in turns to work with a peer to deliver parts of their personal training session, demonstrating how to deliver and monitor each exercise effectively. They demonstrate all aspects of the process from providing effective demonstrations to supporting a client who may be struggling or lacking motivation. Learners practically deliver parts of their planned gym-based exercise programme building up to all the different types of exercise for each type of equipment or lift. They then put the session together so that they gain experience in delivering a full personal training session to a client. Learners monitor the progress of the clients and the safety of the programme making any adjustments as they progress. Learners could record themselves instructing their peer in the role of a client to see how they perform the role of a personal trainer and examine their strengths and areas for improvement. The tutor spends time with each learner to provide mentorship in their progress and to provide them with key targets to help them develop and improve as a personal trainer. The tutor leads sessions with learners to discuss what progressions or regressions could be made and how a fitness/gym instructor would go about informing the client of these changes.	20

D3 Reviewing own performance in providing personal training D4 Reviewing client's performance	Learners could be shown a range of feedback methods and then discuss how to best collate feedback. This should include how to identify the learners' relationship with the client, the success of the session and any areas to improve on when delivering the session The tutor could develop learners' ability to evaluate effectively by delivering a classroom-based session focused on effective evaluation. They share good practice in effective evaluation and provide learners with visuals of what a good evaluation may look like. Learners explore the difference between evaluating their own performances and the performances of their clients. They consider what different aspects should be taken into consideration when carrying out this process and how they could evaluate themselves and their clients. Learners attempt to review and evaluate both their own and the client's performances. They clearly differentiate between their own and their client's evaluations and show, through their work, what the differences are in providing effective feedback to their clients and to themselves. A class discussion to consider the value of reviewing exercise sessions is beneficial. This should include improving personal skills, the quality of the exercise session and the different ways to improve the delivery of the exercise session. This will involve the appropriateness of the activities, time allocated to activities, leadership styles and enjoyment. This could develop into how to use the review process well in their career development.	10
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Details of links to other BTEC units and qualifications

Several other units from this qualification complement this unit. These include:

- Unit A: Careers in the Sport and Active Leisure Industry
- Unit B: Health, Wellbeing and Sport
- Unit D2: Personal Trainer Skills Development
- Unit 4: Nutrition for Physical Performance
- Unit 6: Sporting Injuries
- Unit 8: Fitness Testing
- Unit 9: Fitness Training
- Unit 13: Influence of Technology in Sport and Physical Activity.

Resources

For this unit, learners must have access to:

- gym equipment, to include cardiovascular machines, free weights and fixed weights
- recording equipment, such as a video camera, a tablet, a voice recorder
- a range of field fitness testing and health screening equipment
- normative data for interpretation of test results

The 2019 qualifications are industry-focussed and it is key that learners maintain up to date understanding and also visibility of key developments and influences within the market

Social Media

Add here named examples and types of individuals/bodies to follow. Collate under platform headings (i.e. twitter, Instagram, podcasts etc)

Twitter

@cimspa
@EMDForLife
@_ukactive
@stevekamb
@BarrysBootcamp
@CrossFit
@senada.greca
@thebodycoach

Websites

<https://www.ptdirect.com/training-design/anatomy-and-physiology> - A range of anatomy and physiology based information and articles for fitness instructors

<https://www.academyoffitnessprofessionals.com/personal-trainer-factsheets/> - factsheets linked to personal training <https://www.getbodysmart.com/> - annotated diagrams of the main body systems

<https://www.fit4training.com/single-post/2017/04/11/anatomy-physiology-revisiononline-resources-fit4training> - a list of useful anatomy and physiology websites and resources to support fitness professionals

<https://www.bbc.co.uk/bitesize/guides/zy62hv4/revision/2> - overview of the impact of demographics on physical activity participation

<https://www.clubindustry.com/step-by-step/ten-commandments-exceptional-customer-service-fitness-industry> - key features of excellent customer service in a fitness environment
<https://www.gymmaster.com/customer-service-importance/> - how to provide great customer service in the gym

<https://cpdonline.co.uk/knowledge-base/health-and-safety/health-and-safety-guidancefor-gym-staff/> - Health and safety guidance for gym staff

<https://www.healthline.com/health/coronary-artery-disease/risk-factors> - Risk factors for Coronary Artery Disease

<https://www.cntw.nhs.uk/content/uploads/2017/12/HS-PGN-14-App9-Irwin-MorganRiskStratTool-V02-Iss-2-Oct-19.pdf> - Irwin and Morgan risk stratification table

<https://www.acsm.org/blog-detail/acsm-certified-blog/2019/11/11/acsm-riskstratification-chart-download> - Downloadable chart that shows a risk stratification process to follow

<https://fitlegally.com/10-ethical-guidelines-fitness-professionals/> - Ethical guidelines for fitness professionals

Textbooks

Adams GM, *Exercise Physiology Laboratory Manual: Health and Human Performance* (Fourth Edition), McGraw Hill Higher Education, 2001 ISBN 9780072489125

Allen MB, *Sports Exercise and Fitness: A Guide to Reference and Information Sources*, Libraries Unlimited Inc, 2005 ISBN 9781563088193

American College of Sports Medicine, *ACSM's Guidelines for Exercise Testing and Prescription* (Seventh Edition), Lippincott Williams and Wilkins, 2005 ISBN 9780781745901

American College of Sports Medicine, *ACSM's Health-Related Physical Fitness Assessment Manual* (Second Edition), Lippincott Williams and Wilkins, 2007 ISBN 9780781775496

Coulson M, *The Fitness Instructor's Handbook: A Complete Guide to Health and Fitness (Fitness Professionals)* (Second Revised Edition), A&C Black, 2007 ISBN 9781408178263

Franks BD and Howley ET, *Fitness Leader's Handbook* (Second Edition), Human Kinetics Europe, 1998 ISBN 9780880116541

Hazeldine R, *Fitness for Sport*, The Crowood Press, 2000 ISBN 9781861263360

Heyward VH, *Advanced Fitness Assessment and Exercise Prescription* (Fifth Edition), Human Kinetics, 2006 ISBN 9780736057325

Howley ET and Franks BD, *Health Fitness Instructor's Handbook* (Fourth Edition), Human Kinetics Europe, 2003 ISBN 9780736042109

Maud PJ and Foster C, *Physiological Assessment of Human Fitness* (Second Edition), Human Kinetics Europe, 2005 ISBN 9780736046336

Powers SK and Howley ET, *Exercise Physiology: Theory and Application to Fitness and Performance* (Sixth Edition), McGraw Hill Higher Education, 2006 ISBN 9780071107266

Sharkey BJ, *Physiology of Fitness* (Third Edition), Human Kinetics, 1990 ISBN 9780873222679

Sharkey BJ and Gaskill SE, *Fitness and Health* (Sixth Edition), Human Kinetics, 2006 ISBN 9780736056144

Skinner J, *Exercise Testing and Exercise Prescription for Special Cases: Theoretical and Clinical Applications* (Third Edition), Lippincott Williams and Wilkins, 2005 ISBN 9780781741132

Stafford-Brown J and Rea S, *BTEC National for Sport and Exercise sciences* (Third Edition), Hodder Education 010 ISBN 9781444111989

Watson AWS, *Physical Fitness and Athletic Performance: A Guide for Students, Athletes and Coaches* (Second Edition), Longman, 1996 ISBN 9780582091108

Definition of key terms

Absolute contraindications to exercise

This term refers to specific health conditions, with which a person should not undertake exercise. These include myocardial infarction or electrocardiography changes, complete heart block, acute congestive heart failure, unstable angina, and uncontrolled hypertension. An instructor should be made aware of any of these conditions using preexercise health screening and must refer the participant to a doctor or similar, relevant professional before any exercise is undertaken

CPD

CPD stands for Continued Professional Development and refers to the process of taking positive action to enhance and develop professional understanding, skills, and abilities. CPD can take many different forms: qualifications, workshops, conferences, e-learning programmes, reading professional literature, watching more experienced colleagues etc.

Dynamic risk assessment

Whilst a 'traditional' risk assessment will take place prior to a session starting, a dynamic risk assessment is carried out throughout the session. It involves the instructor being aware of possible danger areas, noticing unsafe situations as they develop and taking steps, there and then, to remedy the situation. Whilst it's important to complete and record risk assessment before a session as per organisational policy, assessing risk dynamically during the session turns these paper-based projections and assumptions into real-time safety strategies.

Functional exercises

Functional exercises are those that relate directly to the client's life outside the gym. They consist of movement patterns and exercises that will support improvements to the client's life, whether that be 'everyday' actions such as getting in and out of a car or bending down to tie shoelaces, job specific actions such as climbing a ladder or lifting heavy loads, or leisure time pursuits such as cycling or playing football.

Giant sets

This involves very high-intensity lifting. Usually has four exercises that work for the same primary muscle group in slightly different ways. Exercises are performed one after another with no reset. Once the four exercises have been completed, a rest period is taken.

Health screening

All personal trainers must take reasonable steps to safeguard their participants. This means that, as well as ensuring the working area and equipment are safe and in good working order, they must also establish that those wishing to take part are not physically at risk from doing so. Health screening is the term given to the steps an instructor will take to discover if a participant has any underlying health conditions that could be triggered or exacerbated by physical activity. They may include formal checks such as taking blood pressure, medical history etc. and/or asking questions (has anyone got any injuries?) before the session starts, enabling them to defer, refer or adapt the planned activity to optimise participant safety.

Interval training

Interval training alternates short, high intensity bursts of exercise with rest periods. This work/rest cycle is repeated several times, sometimes using the same exercise (e.g., sprinting) or sometimes using a range of different exercises (e.g., tuck jumps, mountain climbers, burpees). Because the periods of exercise are intense, they are only short – often around 30 seconds – with either rest of gentle recovery exercise (e.g., walking) in between. A range of exercise classes/types (that are all very similar to each other) sit under the umbrella term of 'interval training', including metafit, tabata, HIIT, LIIT, GRIT etc.

Modelling

Modelling simply refers to the instructor or another participant demonstrating the exercise or activity to be performed. Many people learn best by seeing the exercise as well as hearing about it, so supporting a verbal description with a visual model will better ensure all participants understand what is required. Modelling also allows common mistakes or misconceptions to be highlighted, with suggestions and visual cues as to how to avoid or correct them, increasing safety and effectiveness.

Mirroring

Like modelling, mirroring refers to demonstrating the exercise or action to be carried out, however, as the word suggests, the action is done by the instructor as a mirror of the participants. Often used in classes where the instructor is at the front, facing participants (e.g., group exercise to music), movements must be made as a mirror image for the group to follow. For example, when the group need to move to the right, the instructor will go to the left, so that everyone moves the 'same way' or if the group need to move forwards, the instructor will move backwards so that they are again going the 'same way' as their participants

Muscle balance

Muscles work together, as a pair (agonist and antagonist) and with surrounding muscles (synergist) to create movement at a joint. Muscle balance refers to the maintenance of balance whilst these muscles are being used, so that the joint stays at the centre of the movement to protect from injury and ensure movement efficiency. Exercises that focus on one specific muscle or muscle group without giving time for rest or recovery, or exercises that are carried out with incorrect technique or alignment will be less effective and increase the risk of injury.

Negative/concentric training

The client performs some warm-up reps. A weight beyond their 1RM is then used – 105% above 1RM. The PT has to support the client to lift this weight. Two to three reps are completed.

Pre-post exhaust

This involves using two exercises in the routine that engage the same muscle or muscle groups with no rest period between the exercises.

Isolation exercises are performed before or after compound exercises to fatigue a targeted muscle group.

The terms 'pre' and 'post' refer to when the isolation exercise is carried out in the routine.

Pre-exhaust is when the isolation exercise is carried out before the compound exercise.

Post-exhaust is when the isolation exercise is carried out after the compound exercise.

Pyramid sets

Pyramid training is a collection of a set of the same exercise. Starts with lightweight and higher reps. Builds up to a heavier weight and fewer reps. A beginner might do three set pyramid. An intermediate-level athlete might go for five sets. An advanced-level athlete may do seven sets.

Scope of own practice

Personal trainers must always work within the scope of their own practice. This means that they must always be appropriately qualified in terms of the advice they offer, activities they instruct, clients they work with and environments in which they work. An instructor without appropriate nutrition-based qualifications should not be offering their services as a dietitian or nutritionist, for example.

SMART goal setting

The acronym SMART is often used to support the setting of goals which are specific, measurable, achievable, relevant and time-bound. SMART can be followed to focus thinking and identify goals which are attainable within the parameters available. This is an example of the SMART acronym, alternatives are valid ensuring they are clearly explained and applied, where the setting of goals is supported.

Supersets

Perform two different exercises back-to-back with little or no rest in-between.

Same muscle supersets – perform two exercises using the same muscle groups.

Antagonistic pair supersets – two exercises are carried out back-to back to work muscles that function as antagonistic muscle pairs, for example, bicep curls followed by triceps extensions.

Tri-sets

This involves high-intensity lifting.

Usually has three exercises that work the same primary muscle group in slightly different ways. Exercises are performed one after another with no reset. Once the three exercises have been completed, a rest period is taken.