



Australian Government

SISFFIT019 Incorporate exercise science principles into fitness programming

Release: 1

SISFFIT019 Incorporate exercise science principles into fitness programming

Modification History

Not applicable.

Application

This unit describes the performance outcomes, skills and knowledge required to incorporate an understanding of exercise science principles into fitness instruction, programming and provision of fitness advice.

This unit applies to the use of physiological and mechanical principles in training to improve the health- and skill-related components of fitness of clients who have recently completed industry endorsed pre-exercise screening and risk stratification procedures.

This unit applies to personal trainers who typically work autonomously in controlled and uncontrolled fitness environments. Work is performed according to relevant legislation and organisational policies and procedures.

No occupational licensing, certification or specific legislative requirements apply to this unit at the time of publication.

Pre-requisite Unit

Nil

Competency Field

Fitness

Unit Sector

Fitness

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes

1. Consolidate understanding of exercise science principles.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1 Source and access information on exercise science principles relevant to fitness outcomes.
- 1.2 Discuss/explain how understanding of exercise science principles contribute to safe/optimum technique and skill development.

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| | 1.3 Use a wide range of terminology relevant to exercise science principles and fitness outcomes. |
| 2. Apply knowledge to own professional practice. | 2.1 Assess ways in which knowledge of exercise science principles may be used, adapted or challenged in instruction and provision of fitness advice.
2.2 Identify current and emerging knowledge of exercise science principles relevant to development of own professional practice.
2.3 Use knowledge of exercise science principles in day-to-day professional practice.
2.4 Modify approach to fitness programming activities and advice as required. |
| 3. Maintain and update knowledge of exercise science principles. | 3.1 Identify and use opportunities to update and expand own knowledge of exercise science principles.
3.2 Monitor response to changes made to own professional practice or instruction.
3.3 Continue to adjust own practice to optimise results. |

Foundation Skills

Foundation skills essential to performance in this unit, but not explicit in the performance criteria are listed here, along with a brief context statement.

SKILLS	DESCRIPTION
Oral communication skills to:	• provide clients with information related to exercise in a manner which they can understand and implement to their exercise sessions.
Numeracy skills to:	• calculate forces and implement basic biomechanical concepts and mathematical equations • interpret how equipment and body position can be changed to alter the forces applied to the body.
Learning skills to:	• ensure application of up-to-date exercise science principles.
Problem-solving skills to:	• accommodate the changing anatomical and physiological responses of the body to exercise programming and instruction • determine how equipment and body position can be changed to alter the forces applied to the body.
Planning and organising skills to:	• develop exercise programs that incorporate complex understanding of the anatomical and physiological adaptations that occur from different types of exercise.

Unit Mapping Information

SISFFIT419A Apply exercise science principles to planning exercise

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1ca50016-24d2-4161-a044-d3faa200268b>

Assessment Requirements for SISFFIT019 Incorporate exercise science principles into fitness programming

Modification History

Not applicable.

Performance Evidence

Evidence of the ability to complete tasks outlined in elements and performance criteria of this unit in the context of the job role. This must include period(s) totalling at least five hours comprising at least five different client contact sessions in a mixture of controlled and uncontrolled environments, and:

- effectively use knowledge of exercise science principles to improve own instructional practice to plan and instruct at least five different client sessions
- conduct sessions that individually or cumulatively incorporate:
 - a variety of exercises which are targeted at health- and skill-related components of fitness, for achieving improvements and adaptations in:
 - muscle contractility and force
 - bone strength
 - nervous system activation
 - submaximal and resting heart rates
 - cardiovascular system adaptations
 - variations of exercise
 - with and without equipment
 - exercises to change:
 - joint action
 - stabilisation of the body
 - forces which act on the body during exercise
 - variations in the contribution of energy from three different energy systems
 - consideration of:
 - musculoskeletal anatomy and physiology
 - mechanical principles
 - physiology concepts.

Knowledge Evidence

Demonstrated knowledge required to complete the tasks outlined in elements and performance criteria of this unit:

- organisational policies and procedures in relation to:
 - work health and safety/occupational health and safety

- confidentiality of client information
- ethical considerations
- industry endorsed client pre-exercise health screening processes
- industry endorsed risk stratification procedures, exercise implications and referral requirements
- the physiology related to achieving improvements in the following health-related components of fitness:
 - body composition
 - flexibility
 - muscle strength
 - muscle endurance
 - cardiorespiratory endurance
- the physiology related to achieving improvements in the following skill-related components of fitness:
 - balance
 - agility
 - power
 - speed
 - reaction time
 - coordination
 - proprioception
- musculoskeletal anatomy and physiology related to achieving improvements in fitness:
 - structure and function of the skeleton
 - joints in the skeleton
 - cellular structure of muscle fibres
 - sliding filament theory
 - effects of different types of exercises on muscle fibre types
 - muscle attachment sites for the major muscles of the body
 - structure, range of motion and function of muscles, muscle groups and directional terms
 - location and function of skeletal muscle involved in physical activity
 - anatomical axis and planes with regard to joint actions and different exercises
 - joint actions brought about by specific muscle group contractions
 - joints/joint structure with regard to range of motion/movement and injury risk
 - joint movement potential and joint actions
 - the specific roles of the nervous system in controlling skeletal muscle:
 - the central nervous system
 - the peripheral nervous system including somatic and autonomic nervous systems
 - nervous control and transmission of a nervous impulse
 - structure and function of a neuron

- role of a motor unit
- function of muscle proprioceptors and the stretch reflex
- reciprocal inhibition and its relevance to exercise
- the neuromuscular adaptations associated with exercise training
- the benefits of improved neuromuscular coordination/efficiency to exercise performance
- concepts and principles of mechanics relevant to fitness:
 - forces which act on the body during exercise
 - common biomechanical terms
 - lever system in the body
 - structure and function of the stabilising ligaments and muscles of the spine
 - the local muscle changes that can take place due to insufficient stabilisation
 - the potential effects of poor posture on movement efficiency
 - the potential problems that can occur as a result of postural deviations
 - the benefits, risks and applications of the following types of stretching: static (passive and active) and dynamic
 - proprioceptive neuromuscular facilitation (PNF)
 - different exercises that can improve posture
- concepts and principles of the physiology of the body in relation to fitness:
 - the function of heart valves
 - coronary circulation
 - short and long term effects of exercise on blood pressure
 - the effects of exercise on bones and joints including the significance of weight bearing exercise
 - delayed onset muscle soreness (DOMS)
 - exercises or techniques likely to cause delayed onset muscle soreness
 - the short and long term effects of different types of exercise on muscle
 - the benefits and limitations of different methods of monitoring exercise intensity including: talk test, rate of perceived exertion
 - heart rate monitoring and the use of different heart rate zones
 - physiological responses to physical activity in various environmental conditions
- the expected physiological responses, and appropriate action, to:
 - a single bout of exercise
 - physical activity in various environmental conditions
 - long term exercise programs
- scope of practice for a personal trainer.

Assessment Conditions

Skills must be demonstrated in:

- a fitness industry workplace or simulated environment with clients with real or simulated health and fitness goals.

Assessment must ensure access to:

- current industry endorsed best practice for client pre-exercise health screening and risk stratification
- organisational policies and procedures relevant to incorporating exercise science principles into fitness programming.

Assessment must ensure use of:

- informed consent forms
- client record forms
- planning and evaluation documentation with inclusion of identified improvements to professional practice
- clients; these can be:
 - clients in an industry workplace, or
 - individuals who participate in role plays or simulated activities, set up for the purpose of assessment, in a simulated industry environment operated within a training organisation.

Assessment activities that allow the individual to:

- demonstrate ability to incorporate exercise science principles into the instruction of sessions catering for:
 - beginners, intermediate and advanced participants
 - low and high impact.

Assessors must satisfy the Standards for Registered Training Organisation's requirements for assessors, and:

- have achieved a Diploma of Fitness or above; and
- have at least 1 year consecutive post qualification fitness industry experience in the application of the skills and knowledge of the Diploma of Fitness.

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