



Australian Government

SISFFIT049 Use exercise science principles in fitness instruction

Release: 1

SISFFIT049 Use exercise science principles in fitness instruction

Modification History

Supersedes and is not equivalent to SISFFIT019 Incorporate exercise science principles into fitness programming.

Application

This unit describes the performance outcomes, skills and knowledge required to identify how exercise science principles (also known as exercise training principles) apply to fitness instruction, and use those principles in the design and ongoing modification of exercise programs for clients.

This unit has a direct relationship with, and supports the following units involving the application of exercise science and training principles to program design:

- SISFFIT041 Develop personalised exercise programs
- SISFFIT043 Develop and instruct personalised exercise programs for body composition goals
- SISFFIT044 Develop and instruct personalised exercise programs for older clients
- SISFFIT045 Develop and instruct personalised exercise programs for adolescent clients.

This unit applies to personal trainers who work independently with clients using discretion and judgement to develop and deliver individually tailored client exercise programs. They practise in settings such as fitness facilities, gyms, leisure and community centres, client workplaces and homes and outdoor locations.

The skills in this unit must be applied in accordance with Commonwealth and State or Territory legislation, Australian standards and industry codes of practice.

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. Identify information sources for exercise science principles relevant to fitness instruction.
2. Incorporate exercise science principles in fitness instruction.
3. Maintain and update knowledge of exercise science.

PERFORMANCE CRITERIA

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

- 1.1. Identify credible sources of evidence-based information about exercise science principles that are relevant to fitness instruction.
- 1.2. Review information and identify how exercise science principles relate to safe and optimum training and client fitness improvements.
- 1.3. Interpret exercise science terminology and its application to fitness instruction.
- 2.1. Identify relevance of exercise science principles to individual clients at different stages and levels of exercise activity.
- 2.2. Design programs for individual clients that consider client characteristics and goals and appropriate exercise science principles.
- 2.3. Monitor and adjust programs consistent with exercise science principles.
- 3.1. Identify and use opportunities to update and expand knowledge of exercise science relevant to scope of practice for personal trainers.
- 3.2. Use critical thinking processes to evaluate changing and emerging evidence-based information and its application to fitness instruction.

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

Reading skills to:

- interpret unfamiliar and complex evidence-based information including scientific, anatomical and physiological terminology.

Numeracy skills to:

- interpret numerical information of varying complexity involving times, frequency, intervals, volume and loads
- complete calculation and estimations of varying complexity for program design.

Learning skills to:

- monitor emerging and changing information for use in own practice.

Unit Mapping Information

Supersedes and is not equivalent to SISFFIT019 Incorporate exercise science principles into fitness programming.

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 SISFFIT049 Use exercise science principles in fitness instruction

Modification History

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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, and:

- source information from credible sources about the exercise science principles of:
 - adaptation
 - overload
 - specificity
 - individualisation
 - progression and regression
 - reversibility
- evaluate key aspects of the above information relevant to fitness instruction and identify how it can be used to inform the design of personalised exercise programs
- document how exercise science principles are incorporated into the design of four client programs, and record the following details for each client:
 - a profile of the client and how individual characteristics of age, sex, fitness levels and basic physical characteristics have been used to design the program
 - how the program is systematically structured to provide progression towards planned goals and adaptations
 - rationale for the selection of exercises that relate to the principle of specificity
 - how the principle of overload has been used to determine the volume and intensity of exercises and frequency of sessions
 - rationale for the types of recovery that are incorporated into sessions, and how sessions are sequenced to allow recovery from specific types of exercises between sessions.

Knowledge Evidence

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

- credible sources of evidence-based exercise science information that draw links with fitness instruction activities relevant to personal trainers
- meaning and key physiological aspects of the following exercise science principles, how the principles interrelate, and how they underpin exercise program design and instruction:
 - adaptation

- overload
- specificity
- individualisation
- progression and regression
- reversibility
- how each of the exercise science principles is applied to achieve improvements in:
 - health related components of fitness:
 - cardiovascular endurance
 - muscle strength
 - muscle endurance
 - flexibility
 - body composition
 - skill related components of fitness:
 - power
 - speed
 - agility
 - coordination
 - balance
 - reaction time
 - proprioception
- meaning of the following terms as they apply to exercise:
 - acute physiological response
 - chronic physiological adaptation
- key aspects of physiological responses to exercise:
 - cardiovascular system including acute responses and chronic adaptations of the cardiovascular system to aerobic, anaerobic and strength training
 - respiratory system including acute responses and chronic adaptations of the respiratory system to aerobic, anaerobic and strength training
 - musculoskeletal system:
 - acute musculoskeletal responses and chronic adaptations to aerobic, anaerobic and strength training
 - responses of bone, joints and muscle tissue to weight bearing activities
 - neuromuscular system:
 - acute neuromuscular responses and chronic adaptations to aerobic, anaerobic and strength training
 - responses to high intensity, strength, power, speed and hypertrophy training
 - endocrine system:
 - acute responses and chronic adaptations of the endocrine system to anaerobic training
 - acute and chronic hormonal responses to aerobic and strength training

- key aspects of physiological adaptations relevant to participating in long-term and endurance training:
 - energy system and substrate utilisation
 - nervous system improvements
 - improved thermoregulation
 - increased lactate threshold
- key physiological adaptations that occur from both high and low impact training
- role of exercise and fitness in the prevention of common exercise related injuries and day-to-day falls, and types of physiological adaptations that are related to this reduced risk
- meaning of overtraining, common physiological responses, and client signs and symptoms
- key aspects of physiology that relate to short and longer term recovery periods:
 - physiological needs and responses between sets of exercises
 - physiological needs and responses during cool down phase of exercise sessions
 - physiological needs and responses between exercise sessions.

Assessment Conditions

Skills can be demonstrated in:

- the workplace, or
- a simulated workplace set up for the purpose of skills assessment.

Assessment must ensure use of:

- evidenced-based information about exercise science principles from credible sources
- exercise program plans.

Assessors must:

- satisfy the Standards for Registered Training Organisations requirements for assessors, and
- hold a Certificate IV in Fitness, and have a collective period of at least two years' experience working in fitness instruction, where they have applied the skills and knowledge covered in this unit of competency; the two years' experience can incorporate full and part time experience, or
- be a registered or accredited practising health or exercise professional with a degree and experience relevant to this unit of competency.

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