Australian Government

Department of Education, Employment and Workplace Relations

SISFFIT305A Apply anatomy and physiology principles in a fitness context

Release: 1

SISFFIT305A Apply anatomy and physiology principles in a fitness context

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit describes the skills and knowledge required to apply an understanding of human body structure and systems and terminology as they relate to exercise instruction. It applies to fitness professionals who may operate with some level of autonomy or under limited supervision and incorporates the self directed application of knowledge and skills. No licensing, legislative regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit requires the exercise instructor to demonstrate during exercise delivery the application of an understanding of body structure and systems and terminology as they apply to identifying and analysing client needs, exercise selection and modification.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units	Nil	

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Apply knowledge of anatomical and physiological terminology to fitness instruction.	1.1. Identify ***relevant anatomical and physiological terminology*** and apply to the development of a fitness program. 1.2. Apply relevant anatomical and physiological terminology to fitness instruction. 1.3. Apply relevant anatomical and physiological terminology in the provision of ***fitness advice***.
2. Apply knowledge of anatomy and physiology to fitness instruction	2.1. Identify and apply the ***structural levels of organisation*** in the study of anatomy and physiology to the development of a ***fitness program or fitness instruction***. 2.2. Apply the relevant principles of the structural levels of organisation in the study of anatomy and physiology to ***fitness instruction***. 2.3. Identify ***contra-indications*** fitness activities, and where to refer to appropriate ***medical and allied health professionals*** is indicated. 2.4. Apply the principles of anatomy and physiology as they relate to fitness instructions in the provision of fitness advice. 2.5. Use ***anatomical terminology*** and describe and demonstrate movements of the body to clients.
3. Apply the relevant principles of the body's systems to fitness instruction	3.1. Apply the relevant principles of the body's systems to the performance delivered from fitness instructions. 3.2. Apply the relevant principles of the body's systems as they relate to fitness instructions in the provision of aftercare service and advice.
4. Apply an understanding of the structure and function of the musculoskeletal system when providing information about exercise programs.	4.1. Describe the structure, growth and development of bone tissue and factors affecting growth to clients. 4.2. Relate the type and the structure of joints to joint mobility, joint integrity and risk of injury when planning exercise programs and providing information to clients. 4.3. Identify and describe the movements allowed at the major joints of the body when providing information about exercise programs. 4.4. Identify the major bones, bony landmarks, major joints and major muscles when providing information about fitness testing and exercise programs. 4.5. Use knowledge of the structure of skeletal muscle and the process of muscle contraction to plan and

ELEMENT	PERFORMANCE CRITERIA
	develop exercise programs. 4.6. Apply knowledge of major muscles and their actions, and the role of the muscle during contraction, to select suitable exercises when planning exercise programs. 4.7. Analyse common exercises to identify to clients, the joint action occurring, the muscle responsible and the type of contraction 4.8. Discuss the interplay between muscle innervation and muscle contraction. 4.9. Relate the oxidative capacity of different muscle fibres to different fitness activities. 4.10. Describe ideal postural alignment and common pathological postures to fitness clients.
5. Relate the structure and function of the cardiovascular system and respiratory system to fitness activities.	5.1. Explain the structure and function of the cardiovascular system and the respiratory system when providing information to clients. 5.2. Describe the process of gaseous transport and gaseous exchange occurring during fitness activities to clients. 5.3. Explain the role of the cardio-respiratory system in the carrying, delivery and extraction of oxygen for muscle contraction and relate to exercise intensity. 5.4. Investigate the oxygen demands of various fitness activities to identify the relationship between exercise intensity and the circulatory and ventilation responses. 5.5. Relate the differences in individual respiratory volumes and basic circulatory responses, and the regulation of these physiological responses to the client's fitness levels.
6. Apply knowledge of the structure and function of the nervous system to fitness activities.	6.1. Describe the basic structure of the nervous system and its role in the control of movement and exercise to clients. 6.2. Apply the process of excitation and conduction of nerve impulses during muscle contraction, when providing information about fitness activities. 6.3. Explain the role of the sensory receptors during movement, in stretching and flexibility to clients. 6.4. Explain to clients the relationship between the composition of motor units and motor unit innervation to the strength of muscle contraction, during fitness activities.
7. Apply knowledge of the body's energy	7.1. Explain the effect of exercise intensity on the energy substrate to clients during exercise instruction.

ELEMENT	PERFORMANCE CRITERIA
systems to exercise instruction.	7.2. Apply the limiting factors of the body's energy systems to the setting of exercise intensities when instructing fitness activities.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- applying the structure and function of anatomy and physiology to the performance of fitness instructions.
- literacy skills to source, read ,comprehend and apply relevant information on the anatomy and physiology of the human body in a fitness context.
- communication skills required to translate information on the anatomy and physiology of the human body when providing advice, responding to questions and providing information and reassurance to the client.

Required knowledge

- Occupational Health and Safety regulations and requirements.
- workplace policies and procedures in regard to the performance of fitness instructions
- terminology of anatomy and physiology as it relates to fitness.
- anatomy and physiology in relation to fitness, including:
  - the structural levels of organisation in the study of anatomy and physiology
  - the functions of the internal transportation systems of the body
  - the gas exchange that occurs within the respiratory system
  - role of the nervous system
  - role of the skeletal system
  - role of the muscular system
- body systems in regard to their interdependence and purpose in relation to a healthy body and their relationship to the muscles and nerves:
  - skeletal and muscular, including muscle contractibility and motor points
  - lymphatic, digestive, respiratory, and circulatory systems
- the appearance and management of contra-indications and adverse effects.

Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	

Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential:
	• knowledge and consistent application of relevant workplace policies and procedures.
	• knowledge and consistent application of safe work practices and the safe use of equipment according to Occupational Health and Safety regulations or requirements.
	• structure and functions of anatomy and physiology as they apply to fitness instructions.
	• basic anatomical terminology for the development of the fitness program, the performance of the exercise instructor and the provision of aftercare service and advice.
	• knowledge and consistent application of the principles of the body's systems as they apply to fitness.
	• applying knowledge of anatomy and physiology to analyse and identify client requirements and or needs and develop and record a fitness program including:
	  • areas requiring special treatment
	  • range of appropriate fitness instructions
	  • review of previous exercise programs
	• applying knowledge of anatomy and physiology to evaluate the clients needs and requirements and to advise the client on future fitness instructions.
	• accurately and legibly recording relevant data.

Context of and specific resources for assessment	Assessment must ensure that the candidate: • demonstrates competency in the workplace or a simulated workplace environment in a range of situations which may include client interruptions and involvement in other related activities normally expected in the workplace. For further guidance on the use of an appropriate simulated environment, refer to the Assessment Guidelines in this Training Package

EVIDENCE GUIDE	
	• has access to relevant documentation, such as workplace policy and procedures manuals. • has access to a range of clients with different requirements.

Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:
	• observation of the learner performing a range of tasks in a simulated work environment, over sufficient time to demonstrate his or her handling of a range of contingencies. Tasks may include:
	  • identifying client characteristics and developing a fitness program according to client needs
	  • performance of fitness instructions according to client requirements
	  • providing advice on fitness activities according to client needs.
	• written and oral questioning or interview to assess knowledge and understanding of anatomy and physiology as it relates to planning and provision of exercise programs, including aftercare advice. Questions will be asked in a manner appropriate to the language and literacy level of the learner.
	• completing workplace documentation relevant to the provision of fitness instructions
	• third-party reports from experienced fitness professionals in the workplace.
	• completion of self-paced learning materials, including personal reflection and feedback from trainer or coach or supervisor.
	
	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:
	
	• SISFFIT304A Instruct and monitor fitness programs

Guidance information for assessment	

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Relevant anatomical and physiological terminology must include:	• definitions of anatomy and physiology
	• anatomical terminology
	• tissue types
	• global and local muscular systems:
	  • functions
	  • types and classifications
	  • disorders of muscular systems
	• nervous system:
	  • functions
	  • anatomy of nervous system
	  • nerves
	  • reflex arc
	  • disorders of the nervous system
	• skeletal system:
	  • function
	  • types of bones
	  • gross and microscopic anatomy
	  • disorders of skeletal system
	• circulatory system:
	  • heart anatomy
	  • functions
	  • circulation pathways
	  • blood vessels
	  • blood
	  • disorders of the circulatory system
	• respiratory system:
	  • functions
	  • anatomy
	  • mechanics of breathing
	  • disorders of respiratory system
	• lymphatic system:

RANGE STATEMENT	
	• function • anatomy • disorders of lymphatic system • endocrine system: • function • anatomy.

RANGE STATEMENT	
The structural levels of organisation may include	• the human cell • human tissues • body organs • body systems.
The development of ***a fitness program*** must include but is not limited to:	• frequency and duration • techniques • equipment • contra-indications • relevant medical history and or medications • outcomes of previous exercise programs.

Contra-indications may include but are not limited to:	• disorders of the:
	  • skeletal system
	  • muscular system
	  • nervous system
	  • circulatory system
	  • respiratory system
	  • lymphatic system.

Medical and allied health professional may include:	• sports physician • sports doctor • general practitioner • physiotherapist • accredited exercise physiologist • occupational therapist • remedial massage therapist • chiropractor • osteopath • accredited practising dietician • podiatrist • psychologist • aboriginal health worker.
Fitness advice may include but is not limited to:	• lifestyle changes • additional fitness activities
The relevant functions of the body's systems may include:	• circulatory • lymphatic • respiratory • nervous • skeletal • muscular.

RANGE STATEMENT	
The performance of ***fitness instructions*** may include but is not limited to:	• one-on-one • small group • electronic.

Unit Sector(s)

Unit sector	Fitness

Co-requisite units

Co-requisite units		

Competency field

Competency field	