



National Unit Specification: general information

UNIT Human Anatomy, Physiology and Physical Activity (SCQF level 5)

CODE F40E 11

SUMMARY

This Unit is a Mandatory Unit of the NC Sport and Fitness (SCQF level 5) award, and has been designed to be undertaken as part of that award. However this may be studied as a stand-alone Unit.

The purpose of this Unit is to provide the candidate with the underpinning knowledge and basic understanding of anatomical and physiological components of the major body systems that affect the development of health related fitness. Furthermore the candidate will be able to correctly describe the basic long term physiological effects that regular physical activity has on these body systems.

OUTCOMES

On completion of this Unit the candidate will be able to:

- 1 Identify the basic anatomical structures of the main human body systems that affect the development of health related fitness.
- 2 Describe the main physiological functions of the main human body systems that affect the development of health related fitness.
- 3 Describe the major long term physiological effects that regular physical activity can have on human body systems.

RECOMMENDED ENTRY

Entry is at the discretion of the centre.

Administrative Information

Superclass: RH

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National Unit Specification: general information (cont)

CREDIT VALUE

1 credit at level 5 (6 credit points at SCQF level 5*).

**SCQF credit points are used to allocate credit to qualifications in the Scottish Credit and Qualifications Framework (SCQF). Each qualification in the Framework is allocated a number of SCQF credit points at an SCQF level. There are 12 SCQF levels, ranging from Access 1 to Doctorates.*

CORE SKILLS

There may be opportunities to gather evidence towards Core Skills in this Unit, although there is no automatic certification of Core Skills or Core Skills components.

National Unit Specification: statement of standards

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Acceptable performance in this Unit will be the satisfactory achievement of the standards set out in this part of the Unit Specification. All sections of the statement of standards are mandatory and cannot be altered without reference to SQA.

OUTCOME 1

Identify the basic anatomical structures of the main human body systems that affect the development of health related fitness.

Performance Criteria

- (a) Identify the anatomical structure of the Skeletal system.
- (b) Identify the anatomical structure of the Muscular system.
- (c) Identify the anatomical structure of the Cardiovascular system.
- (d) Identify the anatomical structure of the Respiratory system.

OUTCOME 2

Describe the main physiological functions of the main human body systems that affect the development of health related fitness.

Performance Criteria

- (a) Describe the physiological functions of the Skeletal system.
- (b) Describe the physiological functions of the Muscular system.
- (c) Describe the physiological functions of the Cardiovascular system.
- (d) Describe the physiological functions of the Respiratory system.

OUTCOME 3

Describe the main long term physiological effects that regular physical activity has on human body systems.

Performance Criteria

- (a) Describe the long term physiological effects of activity on the Skeletal system.
- (b) Describe the long term physiological effects of activity on the Muscular system.
- (c) Describe the long term physiological effects of activity on the Cardiovascular system.
- (d) Describe the long term physiological effects of activity on the Respiratory system.

EVIDENCE REQUIREMENTS FOR THIS UNIT

Evidence that covers all Outcomes and Performance Criteria is required. This should take the form of the following written and/or oral recorded evidence:

Learning Outcome 1

The candidate will be assessed by short answer response or multiple choice questions, under closed-book conditions.

National Unit Specification: statement of standards (cont)

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For successful completion of this Outcome candidates will correctly identify the basic anatomical structures of the following human body systems; skeletal system, muscular system, cardiovascular system and the respiratory system.

Learning Outcome 2

This will be assessed by restricted response, under closed-book conditions. The candidate will briefly describe the main physiological functions of the body.

For successful completion of this Outcome candidates will briefly describe a minimum of two physiological functions for each of the following human body systems; skeletal system, muscular system, cardiovascular system and respiratory system.

Learning Outcome 3

This will be assessed by the means of restricted response, under closed-book conditions.

For successful completion of this Outcome candidates will briefly describe a minimum of two long-term physiological effects that physical activity has on each of the following human body systems; skeletal system, muscular system, cardiovascular system and the respiratory system.

An Assessment Support Pack has been produced for this Unit. This pack includes a sample of activity plans, a template for the plan, candidate review sheets and an observation checklist. Centres wishing to produce their own instruments of assessment should refer to the Assessment Support Pack to ensure that they are of a comparable standard.

National Unit Specification: support notes

UNIT Human Anatomy, Physiology and Physical Activity (SCQF level 5)

This part of the Unit Specification is offered as guidance. The support notes are not mandatory.

While the exact time allocated to this Unit is at the discretion of the centre, the notional design length is 40 hours.

GUIDANCE ON THE CONTENT AND CONTEXT FOR THIS UNIT

This Unit is likely to form part of a Group Award and is primarily designed to provide candidates with knowledge of the broad nature of the structure and function of the major body systems and the effect physical activity has on the body. It is therefore likely that the Unit will be delivered early on in the NQGA Sports & Fitness award.

Outcome 1

Skeletal system

Identification of major bones in the human body including at least 4 from each grouping:

- ◆ lower body — pelvic girdle, femur, tibia, fibula, metatarsals, tarsals, phalanges
- ◆ upper body — cranium, vertebrae column, scapula, clavicle, sternum, rib cage, humerus, radius, ulna, metacarpals, carpals, phalanges

Muscular system

The identification of major muscles in the human body including at least five from each area:

- ◆ front of the body — pectorals, deltoids, biceps, rectus abdominis, external obliques, sartorius, quadriceps, tibialis anterior
- ◆ back of the body — trapezius, teres major, latissimus dorsi, erector spinae, triceps, gluteus maximus, hamstrings, gastrocnemius, soleus

Cardiovascular system

The identification of major components within the cardiovascular system including at least three from the list below:

- ◆ the heart structure — aorta, left atrium, left ventricle, septum, right ventricle, right atrium

Respiratory System

The identification of major organs found in the respiratory system including at least three from the list below:

- ◆ oral/nasal cavity, trachea, lungs, bronchus, bronchioles, alveoli

National Unit Specification: support notes (cont)

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Outcome 2

Skeletal system

Briefly describe a minimum of two physiological functions of the skeletal system:

- ◆ movement/leverage
- ◆ protection
- ◆ structural support
- ◆ mineral storage
- ◆ blood cell production

Muscular system

Briefly describe a minimum of two physiological functions of the muscular system:

- ◆ heat production
- ◆ posture
- ◆ joint support
- ◆ movement
- ◆ muscle movement- eccentric, concentric, isometric contractions
- ◆ agonist/ antagonists pairs

Cardiovascular system

Briefly describe a minimum of two physiological functions of the cardiovascular system:

- ◆ transport of oxygenated blood
- ◆ transport of deoxygenated blood
- ◆ temperature control
- ◆ removal of waste products
- ◆ supply of nutrients

Respiratory system

Briefly describe a minimum of two physiological functions of the respiratory system:

- ◆ bring oxygen into the body
- ◆ removing carbon dioxide from the body
- ◆ controlling of depth of breathing
- ◆ controlling of speed of breathing

National Unit Specification: support notes (cont)

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Outcome 3

Long term physiological effects and physical activity have on:

Skeletal system

Briefly describe a minimum two long term physiological effects on the skeletal system due to physical activity:

- ◆ increased bone strength and thickness
- ◆ increased strength of the tendon and ligaments
- ◆ increased bone mineral content
- ◆ increased cartilage
- ◆ increased blood cell production

Muscular system

Briefly describe a minimum two long term physiological effects on the muscular system due to physical activity:

- ◆ increase in strength
- ◆ increase in muscle size
- ◆ improve posture
- ◆ increase in muscle speed
- ◆ improves muscle flexibility

Cardiovascular system

Briefly describe a minimum two long term physiological effects on the cardiovascular system due to physical activity:

- ◆ reduction in resting heart rate
- ◆ increase in stroke volume/cardiac output
- ◆ increased efficiency regarding transportation/redistribution of blood

Respiratory system

Briefly describe a minimum two long term physiological effects on the respiratory system due to physical activity:

- ◆ more efficient exchange of carbon dioxide and oxygen
- ◆ increased lung efficiency
- ◆ strengthened breathing muscles
- ◆ improved absorption of oxygen

The above lists for Outcome 2 are not exhaustive.

National Unit Specification: support notes (cont)

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GUIDANCE ON LEARNING AND TEACHING APPROACHES FOR THIS UNIT

The candidate can be assessed when appropriate but it is at the discretion of the centre.

The candidate however should be able to demonstrate a basic underpinning knowledge and understanding from Outcome 1. This Outcome will enable the candidate to identify key structures and biological mechanics within the body. The knowledge and understanding achieved from Outcome 1 should allow a transfer of skills from basic structural theory and then progress to the functional aspects within these systems from Outcome 2. The previous Outcomes will then allow the candidate to apply this knowledge and be able to relate this to the major long term effects of physical activity and the different human body systems. In Outcome 3 it should be highlighted that major long term effects of physical activity should be constituted as any physical activity longer than 12 weeks in duration as this would allow for long term adaptations within the body to occur.

It would be beneficial to deliver the Outcomes in sequence, due to the nature of the content and logical progression of the Outcomes.

OPPORTUNITIES FOR CORE SKILL DEVELOPMENT

There may be opportunities for Core Skill development within this module. The nature of this module can allow the candidate to develop *Communication* skills with regards to the centre asking candidates to discuss and explain different systems and responses within the body. This would also allow the candidate to use computer software and presenting information to other candidates in a professional setting.

Further opportunities may arise for candidates to work with others in small discussion groups. The discussions can range from theory driven workshops to presentations to other candidates. Numeric skills are very limited due to the specific subject matter in this module.

Opportunities for *Problem Solving* are limited due to the nature of the subject. However *Problem Solving* skills can be developed in all Outcomes due to candidate being able to select relevant information from, texts, tables, charts, graphs and diagrams. The candidate will also be able to draw valid conclusions and give descriptions supported by evidence.

GUIDANCE ON APPROACHES TO ASSESSMENT FOR THIS UNIT

Opportunities for the use of e-assessment

E-assessment may be appropriate for some assessments in this Unit. By e-assessment we mean assessment which is supported by information and communications technology (ICT), such as e-testing or the use of e-portfolios or e-checklists. Centres which wish to use e-assessment must ensure that the national standard is applied to all candidate evidence and that conditions of assessment as specified in the Evidence Requirements are met, regardless of the mode of gathering evidence. Further advice is available in *SQA Guidelines on Online Assessment for Further Education (AA1641, March 2003)*, *SQA Guidelines on e-assessment for Schools (BD2625, June 2005)*.

To achieve this Unit each candidate will be required to provide recorded evidence to demonstrate their understanding on all aspects of the Performance Criteria.

National Unit Specification: support notes (cont)

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Learning Outcome 1 should be assessed by short answer or multiple choice question response. Candidates should be able to correctly identify the basic anatomical structures of each of the following four human body systems; skeletal system, muscular system, cardiovascular system and the respiratory system.

Learning Outcome 2 should be assessed by restricted response. Candidates should be able to briefly describe, with examples, a minimum of two physiological functions of each of the following four human body systems; skeletal system, muscular system, cardiovascular system and the respiratory system.

Learning Outcome 3 should be assessed by the means of restricted response questions. Candidates should be able to briefly describe, with examples, a minimum of two long term physiological effects that physical activity has on each of the following main body systems; skeletal system, muscular system, cardiovascular system and the respiratory system.

For the purpose of guidance towards assessment content and quantification for all Outcomes, it is recommended that delivery centres utilise the content listed within this Units support notes section; *‘Guidance on the content and context for this Unit’*.

The evidence generated should be produced under closed-book conditions with a time restriction for completion of each task set at 45 minutes per learning Outcome.

CANDIDATES WITH DISABILITIES AND/OR ADDITIONAL SUPPORT NEEDS

The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments, or considering alternative Outcomes for Units. Further advice can be found in the SQA document *Guidance on Assessment Arrangements for Candidates with Disabilities and/or Additional Support Needs* (www.sqa.org.uk).