



Higher National Unit specification: general information

Unit title: Functional Anatomy

Unit code: H1T6 34

Superclass: RH

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Unit purpose

This Unit has been designed to equip candidates with the practical and theoretical skills and knowledge to enable them to gain a broad understanding of the anatomy, blood and nerve supply, common foot deformities and the key structures of the lower limb and foot.

On completion of the Unit the candidate should be able to:

- 1 Identify foot and ankle anatomy and deformity.
- 2 Describe joint movements in the lower limb and foot.
- 3 Evaluate the blood and nerve supply of the lower limb and foot.

Recommended prior knowledge and skills

Although entry is at the discretion of the centre it is recommended that candidates have previous work or voluntary experience working in a health care environment and are currently employed as a podiatry assistant or trainee podiatry assistant. Candidates should have an understanding of the role and scope of practice of the podiatry assistant and have successfully completed the *Principles of Professional Practice* Unit (FN2C 34) and the *Physiology for Care Professional* Unit (FN2A 34).

Credit points and level

1 Higher National Unit credit at SCQF level 7: (8 SCQF credit points at SCQF level 7*)

**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.*

General information (cont)

Core Skills

There are opportunities to develop the Core Skills of *Communication, Problem Solving* and *Working with Others*. There is no automatic certification of Core Skills or Core Skill components in this Unit.

Detail on the opportunities to develop aspects of Core Skills are highlighted in the Support Notes of this Unit specification.

Context for delivery

If this Unit is delivered as part of a Group Award, it is recommended that it should be taught and assessed within the subject area of a Group Award to which it contributes.

This Unit is mandatory within the Professional Development Award (PDA) in Podiatry Support at SCQF level 7. In terms of sequence of delivery, it is recommended this Unit follows on from completion of the *Principles of Professional Practice* Unit (FN2C 34) and the *Physiology for Care Professional* Unit (FN2A 34). The knowledge and skills highlighted within this Unit provide a theoretical and practical base for further study.

This Unit could be delivered as a stand-alone Unit as part of a personal or professional development programme.

Higher National Unit specification: statement of standards

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Outcome 1

Identify foot and ankle anatomy and deformity.

Knowledge and/or Skills

- ◆ Anatomical terms used when discussing the foot
- ◆ Foot and ankle deformities
- ◆ Names and position of joints of the lower limb and foot
- ◆ Musculo-skeletal structure of the foot and ankle
- ◆ Surface anatomy of the lower limb and foot.

Evidence Requirements

Candidates will need to provide evidence to demonstrate their Knowledge and/or Skills by showing that they can:

- ◆ Identify the position and location of the key structures of the surface anatomy of the lower limb.
- ◆ Identify the name and position of all bones of the lower limb and foot.
- ◆ Identify the major joints and know the position of the lower limb and foot.
- ◆ Identify and know the position of the major muscles and tendons of the lower limb and foot.
- ◆ Identify and describe common foot and ankle deformities using the correct anatomical terms.

Higher National Unit specification: statement of standards (cont)

Unit title: Functional Anatomy

Outcome 2

Describe joint movement in the lower limb and foot.

Knowledge and/or Skills

- ◆ Cardinal planes
- ◆ Joint movement and function
- ◆ Lower limb and foot movements during gait
- ◆ Normal and abnormal ranges of motion

Evidence Requirements

Candidates will need to provide evidence to demonstrate their Knowledge and/or Skills by showing that they can:

- ◆ Describe the three cardinal planes of the body.
- ◆ Understand the anatomical terms when describing movements of the joints.
- ◆ Demonstrate their ability to test the range and quality of motion of the joints.
- ◆ Explain the phases of the gait cycle, whilst describing joint function during normal gait.
- ◆ Identify normal and abnormal ranges and quality of motion in the joints of the lower limb.

Higher National Unit specification: statement of standards (cont)

Unit title: Functional Anatomy

Outcome 3

Evaluate the blood and nerve supply of the lower limb and foot.

Knowledge and/or Skills

- ◆ Clinical signs and symptoms of arterial venous and neurological insufficiency in the lower limb and foot.
- ◆ Diabetic foot screening.
- ◆ Neuropathy and clinical care.
- ◆ Normal and abnormal lower limb lymphatic system.
- ◆ Normal and abnormal lower limb neurological system.
- ◆ Normal and abnormal lower limb vascular system.
- ◆ Neurological tests.
- ◆ Pedal pulses.
- ◆ Peripheral arterial disease in clinical practice.
- ◆ Screening tools; 10 gram monofilament and tuning fork.

Evidence Requirements

Candidates will need to provide evidence to demonstrate their Knowledge and/or Skills by showing that they can:

- ◆ Describe the arterial supply to the lower limb and foot.
- ◆ Describe the venous system of the lower limb and foot.
- ◆ Describe the lymphatic system of the lower limb and foot.
- ◆ Recognise and evaluate the clinical signs and symptoms associated with arterial insufficiency in the lower limb and foot.
- ◆ Recognise and evaluate the clinical signs and symptoms associated with venous insufficiency in the lower limb and foot.
- ◆ Recognise and evaluate the clinical signs and symptoms associated with lymphatic deficiency in the lower limb and foot.
- ◆ Recognise and evaluate the clinical signs and symptoms associated with neurological deficiency in the lower limb and foot.
- ◆ Demonstrate an understanding of peripheral arterial disease in clinical care.
- ◆ Demonstrate an understanding of neuropathy in clinical care.
- ◆ Demonstrate an understanding of venous insufficiency in clinical care.
- ◆ Identify and palpate the three pedal pulses: dorsalis pedis, anterior tibial and posterior tibial.
- ◆ Undertake neurological tests using a 10 gram monofilament and tuning fork and evaluate lower limb neurological status.

Higher National Unit specification: support notes

Unit title: Functional Anatomy

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 mandatory within the Professional Development Award (PDA) in Podiatry Support at SCQF level 7 and is designed to support candidates to gain a broad understanding of the anatomy, blood and nerve supply, common foot deformities and the key structures of the lower limb and foot. Trainee podiatry assistants studying this Unit as part of the PDA in Podiatry Support SCQF level 7 will be working with patients in a podiatry clinical environment. In this environment, candidates will be under direct supervision by a Health Professions Council (HPC) registered podiatrist who will identify patients with podiatry conditions that are suitable for the candidate's level of training.

The Outcomes for this Unit are congruent with the Anatomy section of the training manual developed by the Society of Chiropodists and Podiatrists (SOCP) for Podiatry Assistant Practitioners. The clinical content of this training manual is a useful reference source.

Outcome 1

The aim of this Outcome is to gain knowledge of the key anatomical structures of the lower limb and foot and for candidates to become familiar with the anatomical terms used in podiatry clinical practice.

Candidates should be able to identify and correctly name the key anatomical structures of the foot and lower limb. This will include the bones, muscles, tendons and the major joints of the lower limb and foot. Candidates should be able to identify femur, fibula, patella, pelvis, tibia and all the bones of the foot. The three main parts and functions of the foot — rear, mid foot and forefoot should be described.

Candidates should be able to identify the name and position of the ankle, knee, subtalar, metatarsal, phalangeal and interphalangeal joints

Candidates should be able to identify muscles of the lower limb and foot including gastrocnemius, soleus, tendo achilles, tibialis posterior, flexor digitorum longus flexor hallucis longus, tibialis anterior, extensor digitorum longus, peroneus brevis and peroneus longus.

Features of surface anatomy will include bones of the lower limb and foot, bony prominences, points of tendon insertion such as tendo achilles. Candidates should be able to identify these on a live or model lower limb/foot.

Higher National Unit specification: support notes (cont)

Unit title: Functional Anatomy

The anatomical terms used in podiatry practice should be used in both written and verbal descriptions of any structures and position in relation to the body and to the lower limb and foot. These include commonly used podiatry terms such as:

- ◆ abduction and adduction
- ◆ anterior and posterior
- ◆ distal and proximal
- ◆ dorsal and plantar
- ◆ dorsi flexion and plantar flexion
- ◆ eversion and inversion
- ◆ inferior and superior
- ◆ medial and lateral
- ◆ pronation and supination.

Candidates should be able to identify common foot deformities from diagrams or photographs and be able to describe the key features of each condition.

Common foot deformities and conditions candidates should be familiar with include:

- ◆ Claw toes
- ◆ Hallux Abducto Valgus (HAV)
- ◆ Hallux rigidus
- ◆ Hammer toe
- ◆ Mallet toe
- ◆ Pes cavus
- ◆ Pes planus

There is a requirement for candidates to differentiate between normal foot anatomy and a range of fixed and non fixed deformities of the foot.

Outcome 2

The aim of this Outcome is to provide an understanding of the way the joints of the lower limb function as a complete system during movement. It builds on the knowledge gained from Outcome 1 where candidates should now be familiar with the names of bones, muscles and the different types of joints.

Candidates will have an appreciation of the different types of joints and the cardinal planes within which joint movement occurs. There are three cardinal planes applied to the human body within which joint movement occurs: frontal, sagittal and transverse. The candidate will have the ability to describe the movements of joints in those planes which are: inversion and eversion, dorsi flexion and plantar flexion and adduction and abduction.

An understanding of the normal range of motion and quality of motion within particular joints is necessary to ascertain any degeneration or deformity which may effect function or be a causative factor for patient symptoms. Therefore candidates will be able to identify if joint range and quality of motion is within normal limits and be able to describe any abnormality detected using the correct terminology. Any deficits in joint integrity or range of movement should be explained and justified against the baseline of normal presentation.

Higher National Unit specification: support notes (cont)

Unit title: Functional Anatomy

It is important that the candidate understands the function of lower limb anatomy therefore the candidate will have an understanding of the gait cycle and be able to describe how the joints function in each phase. There are two main phases of the gait cycle; contact phase and swing phase.

In a clinical practice situation using anatomical terms, candidates should be able to describe the clinical presentation and movement of at least two lower limb or foot joints and describe their function during the stance phase of gait.

Outcome 3

The aim of this Outcome is to support candidates in the understanding and evaluation of the vascular and neurological systems of the lower limb and foot.

Candidates will require to be familiar with lower limb anatomy relating to:

- ◆ the arterial, venous and lymphatic systems
- ◆ motor, sensory and autonomic nerves

Candidates should be able to recognise signs and symptoms of poor arterial and/or venous supply to the lower limb and foot. They should be able to identify the position of and correctly palpate all three pulses in the foot; dorsalis pedis, anterior tibial and posterior tibial. Patient history and changes to skin texture, colour and temperature will form part of the overall evaluation of lower limb circulation.

Candidates should be able to recognise the signs and symptoms of poor lymphatic drainage and how this manifests itself in the lower limb. Examples of this could include oedema or ulceration.

Candidates should be competent in screening for sensory neuropathy. This is commonly undertaken in people with diabetes using the tools such as 10g monofilament and tuning fork. Use of a web based risk stratification tool for patients with diabetes is used in Scotland. Clinical judgement on any potential sensory deficit will be made using screening results, clinical signs and patient reported symptoms.

Specifically the candidate would be asked to discuss the clinical decisions made on the evaluation of lymphatic, neurological vascular supply.

Candidates will be required to apply an awareness of normal and abnormal in all three systems to clinical care and be able to recognise the respective clinical consequences, such as gangrene, intermittent claudication and ulcers.

Higher National Unit specification: support notes (cont)

Unit title: Functional Anatomy

Indicative reading

Field, D. 2008. *Field's lower limb anatomy, palpation and surface markings*. Edinburgh: Elsevier Churchill Livingstone

Logan, B. M., Singh, D. and Hutchings, R. T. 2004. *McMinn colour atlas of foot and ankle anatomy*. London: Mosby

Romanes, G. J. 1986. *Cunningham's manual of practical anatomy: upper and lower limbs*. 15th ed. Volume 1. Oxford: Oxford University Press

The Society of Chiropodists and Podiatrists Training Manual for Podiatry Assistant Practitioners. 2012. The Society of Chiropodists and Podiatrists, London

Tortora, G. J. and Derrickson, B. 2008. *Principles of anatomy and physiology*. 12th ed. Chichester: Wiley-Blackwell

Whittle, M. W. 2007. *Gait Analysis, an introduction*. 4th Ed. Edinburgh: Butterworth Heinemann Elsevier

Web Pages

http://www.anatomy.tv/new_home.aspx

<http://www.diabetesframe.org/training.asp>

Guidance on the delivery of this Unit

This Unit is most likely to be studied by candidates undertaking the Group Award. It is primarily designed to equip trainee podiatry assistants with the underpinning knowledge and skills to work with patients with a footcare need.

The knowledge and skills highlighted within this Unit provide a theoretical and practical base for further study.

The candidate should have an understanding of the role and scope of practice of the podiatry assistant and have successfully completed the *Principles of Professional Practice* Unit (FN2C 34) and the *Physiology for Care Professional* Unit (FN2A 34).

This Unit is mandatory within the Professional Development Award (PDA) in Podiatry Support at SCQF level 7. In terms of sequence of delivery, it is recommended this Unit follows on from completion of the *Principles of Professional Practice* Unit (FN2C 34) and the *Physiology for Care Professional* Unit (FN2A 34). The knowledge and skills highlighted within this Unit provide a theoretical and practical base for further study.

Each Outcome is mutually supportive of each other and builds on knowledge and skills in a sequential way. An understanding of each of the Outcomes will be required in order to evidence all the Outcomes of this Unit.

Higher National Unit specification: support notes (cont)

Unit title: Functional Anatomy

Guidance on the assessment of this Unit

This Unit could be assessed holistically where possible using a range of assessment instruments and strategies. These could include extended response questions, clinical presentations and review of the candidate's portfolio and competency record.

Candidates could be encouraged to complete a reflective log for all learning activities and to maintain this within a portfolio of evidence. This portfolio can be used to support the Evidence Requirements of the candidate's knowledge and skills in relation to all Outcomes. Clinical practice competences will be formally assessed by the supervising podiatrist and documented in a competency record.

An understanding of the underpinning theory and its application to clinical practice are required. Primary assessment of theory could be integrated for all three Outcomes. For the complete Unit, this could take the form of structured and extended response questions in a closed-book environment.

Assessment of application within a clinical practice setting will be carried out in a live or simulated clinical setting. This should be applied for all three Outcomes and documented by the supervising podiatrist in a competency record. Candidates could be asked to present and discuss the evaluation of clinical findings on a minimum of three patient cases. The correct podiatry anatomical terms should be used in both verbal and written presentations.

Assessment Guidelines

Outcome 1

Candidates could provide written/oral evidence of foot and ankle anatomy and common foot deformities under closed-book conditions with structured short response questions. In addition, candidates could be asked to label or identify key structures using a skeleton foot detailed diagrams or photographs.

To demonstrate clinical practice competency, candidates could be asked to name and correctly identify the position of the key anatomical structures of the lower limb using the correct anatomical terms. This could be assessed in either a simulated or clinical practice setting.

Consideration should be given to the identification of bony prominences, bones, muscles, tendons and the major joints of the lower limb and foot. The assessment should also broadly cover the differences between normal and abnormal foot anatomy.

Supporting evidence from the candidate's workplace supervisor and competency record could be used to verify the assessment.

Higher National Unit specification: support notes (cont)

Unit title: Functional Anatomy

Outcome 2

Candidates could provide written/oral evidence under closed-book conditions with structured short response questions to demonstrate an understanding of the way the joints of the lower limb function as a complete system during movement. It is recommended that the candidate is provided with a series of structured questions relating to the planes of the body, functions of joints and the phases of the gait cycle.

To demonstrate clinical practice competency, candidates could be asked to describe the clinical presentation and movement of at least two lower limb or foot joints and describe the function of these joints during the stance phase of gait. This could be assessed in either a simulated or clinical practice setting. The correct anatomical terms should be used by the candidate in any written and verbal descriptions.

Supporting evidence from the candidate's workplace supervisor and competency record could be used to verify the assessment.

Outcome 3

Candidates could provide written/oral evidence under closed-book conditions with structured short response questions to demonstrate understanding of the vascular and neurological systems of the lower limb and foot. Specifically candidates will require to be familiar with lower limb anatomy relating to:

- ◆ the arterial, venous and lymphatic systems
- ◆ motor, sensory and autonomic nerves

To demonstrate clinical practice competency, candidates could be asked to recognise signs and symptoms of poor arterial, lymphatic and/or venous supply to the lower limb and foot. It is recommended that candidates are able to identify the position of and correctly palpate all three pulses in the foot. Consideration should be given to patient history and any changes to skin texture, colour and temperature as this will form part of the overall evaluation of lower limb circulation.

It is recommended that candidates are able to perform a foot screen for sensory neuropathy in people with diabetes using the appropriate tools. Clinical judgement on any potential sensory deficit will be made using screening results, clinical signs and patient reported symptoms. Specifically the candidate could be asked to reflect on the clinical findings and discuss the clinical decisions made on the evaluation of lymphatic, neurological vascular supply.

Assessment can be carried out in either a simulated or clinical practice setting and candidates should use the correct anatomical terms in any written and verbal descriptions.

Supporting evidence from the candidate's workplace supervisor and competency record could be used to verify the assessment.

Higher National Unit specification: support notes (cont)

Unit title: Functional Anatomy

Online and Distance Learning

The theory elements within this Unit are suitable for online and distance learning with tutor support. It is the responsibility of the centre to ensure the authenticity of the candidates work. The Evidence Requirements stated must be met for all three Outcomes.

An e-learning resource; Foot Risk Awareness and Management Education (FRAME) has been developed by the Scottish Diabetes Group. It is an interactive learning tool using animations and case scenarios and will support candidates to competently record the results from the neurological and vascular tests required to undertake a diabetic foot screen and demonstrate evidence to support Outcome 3. The website can be accessed at <http://www.diabetesframe.org>

Opportunities for developing Core Skills

There are opportunities to develop the Core Skills of *Communication*, *Problem Solving* and *Working with Others* at SCQF level 6 within this Unit, although there is no automatic certification of Core Skills or Core Skills components.

Communication (at SCQF level 6): could be developed through the practical aspect of working with patients in a clinical setting. Obtaining a pertinent history and recording clinical information in a structured format will support the development of verbal and written communication skills. Identifying and summarising information from reference sources will be required to support the Evidence Requirements for this Unit.

Problem Solving (at SCQF level 6): could be developed through the analysis of clinical information on vascular and neurological assessment. An overall judgement on vascular or neurological status will be made through combining this information with clinical signs and symptoms.

Working with Others (at SCQF level 6): could be developed through interactions with patients and staff in a clinical environment. It is anticipated that candidates undertaking this Unit will be trainee podiatry assistants or podiatry assistants who will be working with patients within a podiatry department and supervised by an HPC registered podiatrist.

Disabled candidates and/or those with additional support needs

The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments, or considering whether any reasonable adjustments may be required. Further advice can be found on our website www.sqa.org.uk/assessmentarrangements

History of changes to Unit

Version	Description of change	Date

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General information for candidates

Unit title: Functional Anatomy

This Unit has been designed to equip you with the practical and theoretical skills and knowledge to enable you to gain a broad understanding of the anatomy, blood and nerve supply, common foot deformities and the key structures of the lower limb and foot.

This Unit is made up of three Outcomes and on completion of these you should be able to:

- 1 Identify foot and ankle anatomy and deformity.
- 2 Describe joint movements in the lower limb and foot.
- 3 Evaluate the blood and nerve supply of the lower limb and foot.

Outcome 1 will allow you to develop knowledge and skills of the key anatomical structures of the lower limb and foot. You will become familiar with common foot deformities and anatomical terms used in podiatry clinical practice.

Outcome 2 builds on this and will support your understanding of the way the joints of the lower limb function as a complete system during movement.

Outcome 3 will support you in the understanding and evaluation of the vascular and neurological systems of the lower limb and foot.

Although entry is at the discretion of the centre it is recommended that you have previous work or voluntary experience working in a health care environment and are currently employed as a podiatry assistant or trainee podiatry assistant. You should have an understanding of the role and scope of practice of the podiatry assistant and have successfully completed the *Principles of Professional Practice* Unit (FN2C 34) and the *Physiology for Care Professional* Unit (FN2A 34).

This Unit is mandatory if you are studying for the Professional Development Award (PDA) in Podiatry Support at SCQF level 7. The knowledge and skills highlighted within this Unit provide a theoretical and practical base for further study.

You may be assessed using a range of assessment instruments and strategies which could include extended response questions and discussion of the clinical findings on a minimum of three patient cases. Clinical practice competences will be formally assessed by your supervising podiatrist and documented in a competency record.

Over the course of this Unit there may be opportunities for you to develop the Core Skills of *Communication*, *Problem Solving* and *Working with Others*. If employed within the NHS you could use this as evidence of the Core Skills detailed within the Knowledge and Skills Framework.