



## Higher National Unit specification

### General information

**Unit title:** Orthotics: Foot Orthotics (SCQF level 7)

**Unit code:**

**Superclass:** PE

**Publication date:** May 2016

**Source:** Scottish Qualifications Authority

**Version:** 01

### Unit purpose

The aim of this technical Unit is to equip the learner with practical skills and knowledge to enable them to understand the manufacture of Foot Orthoses (FO).

The learner will gain an understanding of the considerations needed by clinicians to prescribe FOs. They will develop a rational to understand the importance of appropriate manufacturing within elements of clinical practice in the area of FOs in line with COSHH, MHRA regulations, risk assessment, appropriate use of Personal Protective Equipment (PPE) and all necessary health and safety management issues. Throughout this Unit the Learner must follow appropriate quality assurance procedures.

### Outcomes

On successful completion of the Unit the learner will be able to:

Understand how to interpret prescription information, formulate appropriate design and method of manufacture.

- 1 Explain foot and ankle pathology and function.
- 2 Explain the properties, selection and processing of materials for Foot Orthoses.
- 3 Manufacture of Foot Orthoses in compliance with relevant health and safety regulations and quality standards.

### Credit points and level

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

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## **Recommended entry to the Unit**

Access is at the discretion of the Centre.

## **Core Skills**

Opportunities to develop aspects of Core Skills are highlighted in the Support Notes for this Unit specification.

There is no automatic certification of Core Skills or Core Skill components in this Unit.

## **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 the Group Award to which it contributes.

## **Equality and inclusion**

This Unit specification has been designed to ensure that there are no unnecessary barriers to learning or assessment. The individual needs of learners should be taken into account when planning learning experiences, selecting assessment methods or considering alternative evidence.

Further advice can be found on our website [www.sqa.org.uk/assessmentarrangements](http://www.sqa.org.uk/assessmentarrangements).

## Higher National Unit specification: Statement of standards

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The sections of the Unit stating the Outcomes, Knowledge and/or Skills, and Evidence Requirements are mandatory.

Where evidence for Outcomes is assessed on a sample basis, the whole of the content listed in the Knowledge and/or Skills section must be taught and available for assessment. Learners should not know in advance the items on which they will be assessed and different items should be sampled on each assessment occasion.

### Outcome 1

Explain foot and ankle pathology and function.

#### Knowledge and/or Skills

- ◆ Foot and Ankle anatomy and physiology
- ◆ Pathology
- ◆ Biomechanics

### Outcome 2

Explain the properties, selection and processing of materials for Foot Orthoses.

#### Knowledge and/or Skills

- ◆ Material types — EVA, foams and pressure relieving materials
- ◆ Material properties

### Outcome 3

Manufacture of Foot Orthoses in compliance with relevant health and safety regulations and quality standards.

#### Knowledge and/or Skills

- ◆ Manufacturing process foot Orthosis
- ◆ Machine and hand tool use
- ◆ Quality standards

## Higher National Unit specification: Statement of standards

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### Evidence Requirements

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

#### Outcome 1

- ◆ explain the basic bone structure of the foot and ankle.
- ◆ explain a minimum of five basic foot and ankle pathologies.
- ◆ describe basic biomechanics of foot and ankle function during early, mid and late stance phases of gait.

#### Outcome 2

- ◆ identify material types appropriate to prescription.
- ◆ identify properties of materials key to manufacture, including the advantages and disadvantages of using each type.

#### Outcome 3

- ◆ describe the process of designing an orthotic. This will take account of the pathology, the required function and the material.
- ◆ demonstrate appropriate use of hand tools and machinery need to be used during the manufacturing process.
- ◆ demonstrate understanding and adherence to quality standards.



## Higher National Unit Support Notes

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Unit Support Notes are offered as guidance and 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 suitable for either trainee technicians studying FO manufacture or technicians working in an orthotic technical environment within the public or private sectors.

This Unit is designed to enable the learner to produce a body of work that will demonstrate their ability to examine different techniques in the production of FOs, their construction methods, components and materials. Using them to influence the design and production of both fitting and delivery samples.

This Unit will enable learners to produce finished fit for purpose device(s) which clearly show the production process and development of the device(s).

Learners will investigate various process and production techniques to produce a minimum of five finished devices.

#### **Outcome 1 — Explain foot and ankle pathology and function.**

The learner could be given a list of foot anatomical landmarks to locate and foot pathologies describe and explain. The learner could locate the anatomical landmarks using diagrams, photographs or functional models. The learner should also be able to explain the function of the foot anatomy and joint function.

A minimum of six different landmarks and four pathologies should be identified and explained by the learner as part of their evaluation.

#### **Outcome 2 — Explain the properties, selection and processing of materials for Foot Orthoses.**

The learners are required to research the different types of materials used in the manufacture of FOs. They may not use all of the materials at their place of work but they should understand these materials properties and explain their method of manufacture. This will allow learners to demonstrate greater flexibility when developing their own skills.

A minimum of five materials should be researched during this Outcome.

## Higher National Unit Support Notes (cont)

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### **Outcome 3 — Manufacture of Foot Orthoses in compliance with relevant health and safety regulations and quality standards.**

Learners are required to manufacture a minimum of five completed devices, which should incorporate at least two of the materials explored in Outcome 2.

Devices produced could be model/demonstration pieces or prescribed devices finished to a good industry standard, cosmetically pleasing with no obvious flaws. The finished device(s) should use appropriate construction methods and materials and be produced to a fit for purpose standard of finish with no obvious faults or flaws.

Learners should show a clear understanding of the chosen materials and techniques and use these appropriately within their finished device(s). Technical notes, prescriptions, profiles and sketches to accompany the final device(s) could be presented in a log book.

The log book could be in the form of text and photographs, prescriptions and/or worksheets.

The module shall be delivered through a mix of work based placement, classroom learning, practical demonstration and self-study.

The structured delivery shall be over 40 hours supplemented by 40 hours of self-directed study.

It is expected that a reflective log book will be maintained throughout this Unit. (The skill of cast rectification is out with the remit of this Unit)

In Outcome 2, the use of materials may include oven temperature and timings appropriate to material properties.

### **Guidance on approaches to delivery of this Unit**

Whilst this Unit may be taken as a standalone Unit it has been developed as part of the Rehabilitation Technologies HNC and it is recommended that it should be taught and assessed as one of the first Units undertaken by the learner within the orthotics section.

If this Unit is taught as part of the Rehabilitation Technologies HNC opportunities may be taken to link or integrate with other aspects of the Group Award and a thematic approach adopted for both delivery and assessment.

Evaluation could be carried out by learners following either set prescription(s) or investigating and researching different materials, processes and production techniques to design and produce a device that is fit for purpose.

It is recommended that learners should have access to a wide variety of appropriate tooling and materials, learners should be encouraged to (in conjunction with clinical and senior technical colleagues) source and explore alternative processes and manufacturing techniques.

## Higher National Unit Support Notes (cont)

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Throughout this Unit the learner must follow appropriate quality assurance procedures, safe and considerate working practices in line with COSHH, MHRA regulations, risk assessment, appropriate use of Personal Protective Equipment (PPE) and all necessary health and safety management issues.

### Guidance on approaches to assessment of this Unit

Evidence can be generated using different types of assessment. The following are suggestions only. There may be other methods that would be more suitable to learners.

Centres are reminded that prior verification of centre-devised assessments would help to ensure that the national standard is being met. Where learners experience a range of assessment methods, this helps them to develop different skills that should be transferable to work or further and higher education.

### Assessment Guidelines

#### Outcome 1

This can be assessed by means of short answer questions and the use of models or diagrams.

#### Outcome 2

Assessment of this Outcome can be carried out by short question and answer questions and also the learner producing materials that can be used in manufacture.

#### Outcome 3

Evidence of practical performance could be used to verify the learners' abilities. A log book and check list for the Outcomes could be used to verify learners' Knowledge and/or Skills items in these Outcomes. The assessor could then sign-off the completed check list. The learner should have a basic awareness of the line management system within their department to be able to raise any design issues with the relevant person.

### Opportunities for 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 Communication Technology (ICT), such as e-testing or the use of e-portfolios or social software. Centres which wish to use e-assessment must ensure that the national standard is applied to all learner evidence and that conditions of assessment as specified in the Evidence Requirements are met, regardless of the mode of gathering evidence. The most up-to-date guidance on the use of e-assessment to support SQA's qualifications is available at [www.sqa.org.uk/e-assessment](http://www.sqa.org.uk/e-assessment).

## Higher National Unit Support Notes (cont)

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### **Opportunities for developing Core and other essential skills**

There are opportunities to develop the Core Skills of *Communication*, *Problem Solving* and *Working with Others* at SCQF level 5 in this Unit, although no automatic certification of Core Skills or Core Skills components.

## History of changes to Unit

Version	Description of change	Date

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## General information for learners

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This Unit has been designed as part of the Rehabilitation Technologies HNC but may also be undertaken as a standalone Unit for those interested in developing their skills in lower limb orthotics. This Unit will allow you to evaluate and explore a variety of manufacturing techniques, production processes, produce sample devices to fitting using various techniques and complete sample devices to final delivery.

Techniques explored could include forming, draping, component use, tooling and machining.

The assessment for this Unit could be presented in the form of a brief or set prescription from which you will be expected to:

- ◆ evaluate various preparation routes enabling you to produce a thorough investigation on the preparation of various prescriptions for manufacture. These could include model selection and production, identification and preparation, component selection and identification, materials and tooling required in production processes.
- ◆ manufacture a minimum of four samples of prescribed device(s) to finished stage from those selected in the preparation process above one of which should incorporate a joint system. Device(s) produced could be model/demonstration pieces or prescribed devices produced to a good industry standard, cosmetically pleasing and with no obvious flaws. The produced device(s) should use appropriate construction methods and materials and be produced to a fit for purpose standard of finish and with no obvious faults or flaws.
- ◆ manufacture of final device(s), which will incorporate at least two of the materials explored and for which samples have been produced to finished stage(s) above. Device(s) produced could be model/demonstration pieces or prescribed devices finished to a good industry standard, cosmetically pleasing and with no obvious flaws. The finished device(s) should use appropriate construction methods and materials and be produced to a fit for purpose standard of finish and delivery and with no obvious faults or flaws. You will be required to follow appropriate quality assurance procedures, safe and considerate working practices in line with COSHH, MHRA regulations, risk assessment, appropriate use of Personal Protective Equipment (PPE) and all necessary health and safety management issues.