



Higher National Unit specification

General information

Unit title: Orthotics: Upper Limb and Spinal Orthotics (SCQF level 7)

Unit code: HE2P 34

Superclass: PE

Publication date: May 2016

Source: Scottish Qualifications Authority

Version: 02

Unit purpose

This Unit is designed to equip the learners with practical skills and knowledge to enable them to understand the manufacture of Upper Limb and Spinal Orthoses.

Learners will gain an understanding of the considerations needed by clinicians to prescribe Upper Limb and Spinal Orthoses. They will develop a rationale to understand the importance of appropriate manufacturing within elements of clinical practice in the area of Upper Limb and Spinal Orthoses 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:

- 1 Prepare for manufacture of Upper Limb and Spinal Orthoses.
- 2 Identify and understand material properties for Upper Limb and Spinal Orthoses.
- 3 Manufacture Upper Limb and Spinal Orthoses.

Credit points and level

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

Recommended entry to the Unit

Access to this Unit is at the discretion of the centre. However it would be beneficial if learners had completed or working towards the HN Units: *Orthotics: Foot Orthotics*, *Orthotics: Ankle Foot Orthotics*.

Higher National Unit Specification: General information (cont)

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Core Skills

Achievement of this Unit gives automatic certification of the following Core Skills component:

Complete Core Skill	None
Core Skill component	Critical Thinking at SCQF level 6 Planning and Organising at SCQF level 6

There are also opportunities to develop aspects of Core Skills which 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 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.

Higher National Unit specification: Statement of standards

Unit title: Orthotics: Upper Limb and Spinal Orthotics (SCQF level 7)

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.

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

Prepare for manufacture of Upper Limb and Spinal Orthoses.

Knowledge and/or Skills

- ◆ Prescription identification
- ◆ Prescription interpretation
- ◆ Materials and tools
- ◆ Orthotic terminology
- ◆ Model preparation
- ◆ Medicine and Healthcare Regulatory Authority (MHRA)
- ◆ Health and safety legislation
- ◆ Quality assurance

Outcome 2

Identify and understand material properties for Upper Limb and Spinal Orthoses.

Knowledge and/or Skills

- ◆ Material types — thermoplastics (polypropylene and polyethylene), low temperature plastics, foams, padding and strap systems
- ◆ Material properties

Outcome 3

Manufacture Upper Limb and Spinal Orthoses.

Knowledge and/or Skills

- ◆ Manufacture techniques (including draping and finishing)
- ◆ Machine and hand tool use
- ◆ Material types and properties
- ◆ Quality assurance
- ◆ Medical and Healthcare Regulatory Authority (MHRA)
- ◆ Health and safety legislation

Higher National Unit specification: Statement of standards (cont)

Unit title: Orthotics: Upper Limb and Spinal Orthotics (SCQF level 7)

Evidence Requirements for this Unit

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

Outcome 1

- ◆ describe information contained within a prescription for an upper limb orthosis or spinal orthosis using appropriate terminology and explain what should be done if the prescription or the model is not fit for the manufacturing process.
- ◆ prepare model as specified in the prescription explain how to make sure that a prescription refers to a specific model.
- ◆ adhere to relevant health and safety procedures, MHRA regulations, quality assurance and line management processes.
- ◆ complete documentation to comply with quality assurance procedures.

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

- ◆ demonstrate knowledge of the manufacturing techniques applicable to the manufacturing process required.
- ◆ demonstrate appropriate use of hand tools and machinery need to be used during the manufacturing process.
- ◆ adhere to relevant health and safety procedures, MHRA regulations, quality assurance and line management processes.
- ◆ complete documentation to comply with quality assurance procedures.

Minimum mandatory requirement of two completed Upper Limb and two Spinal Orthoses using different manufacturing processes.



Higher National Unit Support Notes

Unit title: Orthotics: Upper Limb and Spinal Orthotics (SCQF level 7)

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

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 time appropriate to material type.

Learners should have awareness of possible variances in Upper Limb and Spinal Orthoses design including cervical orthoses and fabric supports, outside of the initial Upper Limb and Spinal Orthotic techniques developed so far. These may include reinforcements, use of transfers, different padding styles.

This Unit is suitable for either trainee technicians studying Upper Limb and Spinal Orthoses 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 Upper Limb and Spinal Orthoses, 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 product a minimum of six finished devices.

(Note: Finished devices should also be assessed at fitting stage prior to final cover application)

Higher National Unit Support Notes (cont)

Unit title: Orthotics: Upper Limb and Spinal Orthotics (SCQF level 7)

Outcome 1 — Prepare for manufacture of Upper Limb and Spinal Orthoses.

The learner could be given a brief which requires them 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.

A minimum of six different prescriptions (three Upper Limb and three Spinal) should be prepared by the learner as part of their evaluation.

Notes, sketches, photographs and prescription printouts could be presented in a log/work book for assessment at the end of the Unit.

Outcome 2 — Identify and understand material properties for Upper Limb and Spinal Orthoses.

The learners are required to research the different types of materials used in the manufacture of Upper Limb and Spinal Orthoses. 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 four materials should be researched during this Outcome.

Outcome 3 — Manufacture Upper Limb and Spinal Orthoses.

Learners are required to manufacture a minimum of four completed devices (two Upper Limb and two Spinal), 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)

Higher National Unit Support Notes (cont)

Unit title: Orthotics: Upper Limb and Spinal Orthotics (SCQF level 7)

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

Learners should have awareness of possible variances in Upper Limb and Spinal Orthoses design, outside of the initial Upper Limb and Spinal Orthoses techniques developed so far. These may include reinforcements, use of transfers, and different padding styles. Guidance on the delivery and assessment 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 not 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.

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

Evidence of practical performance could be used to verify the learners' capabilities. 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 assessment check list. The learner should have an awareness of the line management system within their department to be able to raise any design issues with the relevant person.

Higher National Unit Support Notes (cont)

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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 developing Core Skills

There are opportunities to develop the Core Skills of *Communication*, *Problem Solving* and *Working with Others* at SCQF level 5 in this Unit.

The Core Skill of *Communication* may be developed through the production of technical notes which may bring together both visual and written notes. The evaluation in Outcomes 1 and 2, and the reflection in Outcome 3 if produced as a written paper may provide opportunities to develop the written communication component at SCQF level 5.

The Core Skill of *Problem Solving* may be developed through the practical stages in Outcomes 1 and 2 where learners are encouraged to explore techniques, identify problems and devise solutions. In Outcome 3 the skill may also be developed as learners work to produce finished devices, and reflect on what they have achieved.

The practical nature of the workshops and equipment access together with design and component use may mean that learners will have to negotiate access with other learners and work with clinicians in the design/selection phase of the final device. This may provide the opportunity to develop the Core Skill of *Working with Others* at SCQF level 5.

This Unit has the Critical Thinking and Planning and Organising components of Problem Solving embedded in it. This means that when learners achieve the Unit, their Core Skills profile will also be updated to show they have achieved Critical Thinking at SCQF level 6 and Planning and Organising at SCQF level 6.

History of changes to Unit

Version	Description of change	Date
02	Core Skills Components Critical Thinking and Planning and Organising at SCQF level 6 embedded.	19/08/16

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General information for learners

Unit title: Orthotics: Upper Limb and Spinal Orthotics (SCQF level 7)

This Unit has been designed as part of the Rehabilitation Technologies PDA but may also be undertaken as a standalone Unit for those interested in developing their skills in upper limb and spinal 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 prepared in the preparation process above. Device(s) produced could be model/demonstration pieces or prescribed devices produced to a good industry standard, cosmetically pleasing 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 with no obvious faults or flaws.
- ◆ manufacture a 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 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 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.

This Unit has the Critical Thinking and Planning and Organising components of Problem Solving embedded in it. This means that when you achieve the Unit, your Core Skills profile will also be updated to show you have achieved Critical Thinking at SCQF level 6 and Planning and Organising at SCQF level 6.