



Higher National Unit specification: general information

Unit title: Core Strength and Posture

Unit code: H1S3 34

Superclass: MD

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Unit purpose

This Unit is designed to enable the candidate to further develop their understanding of human anatomy and physiology, with particular emphasis on the role of core strength in human movement. The maintenance of appropriate posture and awareness of movement and its role in exercise performance.

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

- 1 Describe the influence of planes of movement, gravity, levers, and resistance on exercises.
- 2 Identify and describe the role of skill related components of fitness.
- 3 Describe nervous control of movement, and the role of core strength and posture on exercise performance.

This is one of a suite of Units developed to allow candidates the opportunity to achieve the National Occupational Standard for Personal Training at Level 3. Further information is available through the Sector Skills Council (Skillsactive), and centres are advised to check that candidates have completed appropriate aspects of the NOS. Units within this suite fall within the HNC/D award in Fitness, Health and Exercise. Other specialist Units within this suite are:

- ◆ *Working Effectively and Safely with Clients*
- ◆ *Metabolic Considerations for Personal Trainers*
- ◆ *Planning and Management of Personal Training*
- ◆ *Deliver Personal Training Sessions*

General information (cont)

Recommended prior knowledge and skills

It is recommended that prior to undertaking this Unit candidates should be familiar with the human musculo-skeletal system, the role of health related components of physical fitness, and gym based exercises. The following HN Units would give this knowledge base:

DW60 34	<i>Exercise Physiology and Anatomy</i>
DP8E 34	<i>Exercise Principles and Programming</i>
F9T6 34	<i>Plan, Teach and Evaluate a Gym Based Exercise Session</i>

Credit points and level

0.5 Higher National Unit credit at SCQF level 7: (4 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.*

Core Skills

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

Context for delivery

This Unit is an option within the Group Awards HNC/D Fitness, Health and Exercise. 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.

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. Candidates 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

Describe the influence of planes of movement, gravity, levers, and resistance on exercises.

Knowledge and/or Skills

- ◆ Anatomical axes and planes of movement.
- ◆ Joint actions and exercises in different planes.
- ◆ Influence of gravity on exercises.
- ◆ Influence of levers on exercises.
- ◆ Influence of resistance on exercises.

Evidence Requirements

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

- ◆ Identify the anatomical planes and joint movements associated with each (Sagittal, coronal/frontal, transverse, central longitudinal axis)
- ◆ Describe associated joint movements including flexion, extension, protraction, retraction, plantar flexion, dorsi flexion, abduction, adduction, elevation, depression, inversion (supination), eversion (pronation), rotation, horizontal flexion, horizontal extension
- ◆ Describe how exercise intensity may be varied by manipulating the effects of gravity
- ◆ Describe how exercise intensity may be varied by altering lever length
- ◆ Describe how exercise intensity may be varied by changing how resistance is applied

Higher National Unit specification: statement of standards (cont)

Unit title: Core Strength and Posture

Outcome 2

Identify and describe the role of skill related components of fitness.

Knowledge and/or Skills

- ◆ Balance
- ◆ Co-ordination
- ◆ Agility
- ◆ Reaction Time
- ◆ Speed

Evidence Requirements

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

- ◆ Define and give examples of each of the elements stated in 'knowledge and skills' above
- ◆ Give examples of activities and guidelines which could be used to develop each of the stated knowledge elements.

Higher National Unit specification: statement of standards (cont)

Unit title: Core Strength and Posture

Outcome 3

Describe nervous control of movement, and the role of core strength and posture on exercise performance.

Knowledge and/or Skills

- ◆ Nervous control of movement and posture.
- ◆ Structure and function of the stabilising ligaments and muscles associated with the spine.
- ◆ Causes and effects of postural deviation.
- ◆ Variation in exercise performance resulting from inadequate stabilisation.
- ◆ The impact of core strengthening exercises and their potential for injury/aggravation of postural issues.

Evidence Requirements

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

- ◆ State the key roles of the Central and Peripheral Nervous systems
- ◆ Describe nervous control of movement, including negative feedback loops
- ◆ Describe the effects of Kyphosis, Lordosis, Scoliosis and flatback syndrome
- ◆ Identify the active and passive structures involved in producing/restricting movement of the spine, shoulder girdle and pelvic girdle
- ◆ Describe the effects of core strength on exercise performance and the potential for the aggravation of postural issues

Higher National Unit specification: support notes

Unit title: Core Strength and Posture

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 20 hours.

Guidance on the content and context for this Unit

This Unit is intended to provide knowledge of the anatomy and physiology of the human body that will help to prepare candidates to personalise exercise programmes, with specific reference to Core Strength and Posture. The Unit will help the candidate to identify common postural issues and their implications for movement and exercise. The effects of basic biomechanical concepts and their influence on exercise will be introduced.

Outcome 1: Describe the influence of planes of movement, gravity, levers, and resistance on exercises.

- ◆ Candidates should be able to identify the main anatomical axes and planes of movement (Sagittal, coronal/frontal, transverse, central longitudinal axis), and movements which may be made by different joints within these planes.
- ◆ Joint movements should include
 - Sagittal: flexion, extension, protraction, retraction, plantar flexion, dorsi flexion,
 - Coronal/frontal: abduction, adduction, elevation, depression, inversion (supination), eversion (pronation)
 - Transverse: rotation, horizontal flexion, horizontal extension
- ◆ Candidates should be able to describe how exercise intensity may be varied by manipulating the effects of gravity — for example by altering the angle/s at which the exercise is being performed
- ◆ Candidates should be able to describe how exercise intensity may be varied by altering lever length
- ◆ Candidates should be able to describe how exercise intensity may be varied by changing how resistance is applied — for example by varying moment arm, or using elastic bands and/or cables

Outcome 2: Identify and describe the role of skill related components of fitness.

- ◆ Elements of skill related fitness are frequently used in the development of exercises to improve core strength, so it is important that candidates develop an understanding of those most commonly used. These are identified as Balance, Co-ordination, Agility, Reaction Time, and Speed.
- ◆ Candidates will be expected to be able to define and give examples of each, and suggest activities and current guidelines for their development.

Higher National Unit specification: support notes (cont)

Unit title: Core Strength and Posture

Outcome 3: Describe nervous control of movement, and the role of core strength and posture on exercise performance

- ◆ In order to fully appreciate the importance of posture, it is necessary to have a basic understanding of the role of the Central and Peripheral Nervous systems in the maintenance of balance, co-ordination and movement.
- ◆ Core strength relies primarily on effective use of the active and passive structures involved in production/restriction of movement in the spine, shoulder girdle and pelvic girdle. Candidates will therefore be expected to develop a knowledge of this complex, including pelvic gender differences, and the key muscles and ligaments, both tonic and phasic, which contribute to stability in all anatomical planes.
- ◆ Effects of inappropriate stabilisation may produce postural weakness, so candidates should be able to identify key causes and effects of postural issues, and the potential effects of this on movement and exercise performance.

Guidance on the delivery of this Unit

This Unit should be delivered as one of a number of optional Units that will fully prepare the candidate for work as an exercise professional. This Unit is intended to provide candidates with a basic knowledge and understanding of the anatomy and physiology of the body in terms of posture and core strength. This will enhance the skills of the exercise professional by increasing their awareness of common issues encountered by clients, and to enable a more personalised approach to the development of exercise programmes.

Candidates should develop awareness of functionality in exercise application; therefore the learning and teaching process should involve a holistic approach including practical exercises. The purpose of this Unit is also to encourage candidates to look beyond the immediately obvious issues, and start to apply the concept of an evidence-based approach. The Unit terminology is scientific in nature and it is important that students become comfortable and competent in the use of scientific and medical terminology. Therefore, the use of the correct terminology should be an integral part of the learning, teaching and assessment process.

Guidance on the assessment of this Unit

Outcome 1 should be assessed through diagrams and anatomical descriptions in an unseen, closed-book supervised assessment. Questions may be related to a case study. Outcome 3 forms the major element of this Unit, and it is likely that Centres would assess it using a combination of short answer questions and case studies.

Higher National Unit specification: support notes (cont)

Unit title: Core Strength and Posture

Assessment Guidelines

Outcome 1

This assessment should be completed under supervised, closed-book conditions. This should take the form of questions related to case studies.

Outcome 2

This assessment should be completed under supervised, closed-book conditions

Outcome 3

It is likely that this assessment would be completed under supervised, closed-book conditions.

Online and Distance Learning

If this Unit is delivered by open learning methods, additional planning resources may be required for candidate support, assessment and quality assurance.

Opportunities for developing Core Skills

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

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: Core Strength and Posture

Personal trainers must be able to prepare personalised exercise programmes, and this Unit aims to develop your skills and knowledge of the anatomy and physiology of the human body with specific reference to Core Strength and Posture. The Unit will help you to identify and understand common postural issues and their implications for movement and exercise. The effects of basic biomechanical concepts and their influence on exercise will be introduced.

Outcome 1: Describe the influence of planes of movement, gravity, levers, and resistance on exercises

After completion of this Outcome you should be able to identify the main anatomical axes and planes of movement, and the movements which may be made by different joints within these planes. In addition you should be able to describe how exercise intensity may be varied by manipulating the effects of gravity, levers, and the way that resistance is applied during exercise

Outcome 2: Identify and describe the role of skill related components of fitness.

After completion of this Outcome you should be able to identify elements of skill related fitness that are commonly used in the development of core strength exercises. For the purposes of this Unit these have been identified as balance, co-ordination, agility, speed and reaction time. The Outcome will also look at current guidelines and activities which may be used to develop individual competence in the areas.

Outcome 3: Describe nervous control of movement, and the role of core strength and posture on exercise performance

This Outcome will develop your understanding of the anatomy of the core, and how the nervous system helps the body to maintain effective posture, balance, and co-ordination. Core strength, effective movement and 'good' posture relies primarily on effective use of the active and passive structures involved in production/restriction of movement in the lumbar spine/pelvis/hip joint complex, so you'll develop a more in depth knowledge of this area. This will help you to identify key causes and effects of inappropriate posture, and the potential effects of this on movement and exercise performance