



## National Unit Specification: general information

**UNIT** Sports Mechanics: An Introduction (SCQF level 5)

**CODE** F40K 11

### SUMMARY

This Unit is an optional Unit of the NC Sport and Fitness (SCQF level 5) award, and has been designed to be undertaken as part of that award. However, it may be studied as a standalone Unit.

In this Unit candidates will gain underpinning knowledge of the primary elements of movement patterns and biomechanical principals that affect sporting performance.

On successful completion of this Unit candidates will be able to identify movement patterns and biomechanical principals within sporting performance. The candidates will also be able to observe, analyse and compare skill related technical sporting performance at various levels of competency, evaluate and provide relevant recommendations designed to improve skill related technical sporting performance.

### OUTCOMES

- 1 Identify movement patterns and biomechanical principals and relate to sporting technical performance.
- 2 Analyse and compare athlete performances and identify strengths and weaknesses in sporting activity techniques.
- 3 Evaluate recreational athlete technical performances and present recommendations for improved sporting performance.

### RECOMMENDED ENTRY

Entry is at the discretion of the centre.

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#### Administrative Information

**Superclass:** MA

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## **National Unit Specification: general information (cont)**

### **CREDIT VALUE**

1 credit at SQA Intermediate 2 (6 SCQF 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 is no automatic certification of Core Skills components in this Unit.

Opportunities for developing aspects of Core Skills are highlighted in Learning and Teaching Approaches for this Unit

## **National Unit Specification: statement of standards**

### **UNIT Sports Mechanics: An Introduction (SCQF level 5)**

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 movement patterns and biomechanical principals and relate to sporting technical performance.

##### **Performance Criteria**

- (a) Identify the primary movement patterns relevant to sporting performance
- (b) Identify the biomechanical principals that affect sporting performance.
- (c) Relate movement patterns to selected sports techniques.
- (d) Relate biomechanical principals to selected sports techniques.

#### **OUTCOME 2**

Analyse and compare athlete performances and identify strengths and weaknesses in sporting activity techniques.

##### **Performance Criteria**

- (a) Observe and analyse elite athlete performance, taking into account biomechanical principles and movement patterns.
- (b) Observe and analyse recreational level athlete performance, taking into account biomechanical principles and movement patterns.
- (c) Compare recreational and elite level athlete sporting performances and identify technique strengths and weaknesses.

#### **OUTCOME 3**

Evaluate recreational athlete technical performances and present recommendations for improved sporting performance.

##### **Performance Criteria**

- (a) Evaluate technique performances of recreational level athlete.
- (b) Provide recommendations for improved performance of recreational athlete performance.

## **National Unit Specification: statement of standards (cont)**

### **UNIT Sports Mechanics: An Introduction (SCQF level 5)**

#### **EVIDENCE REQUIREMENTS FOR THIS UNIT**

##### **Outcome 1**

Evidence will be generated through closed-book, short answer response questions of no more than 150 words.

The candidate will be required to identify a minimum of four movement patterns. At least one sporting skill/technique must be related to each movement pattern identified.

The candidate will be required to identify a minimum of four biomechanical principals. For each biomechanical principal identified, the candidate must explain their effect on at least one sporting skill/technique.

##### **Outcome 2**

Evidence will be generated through open-book, short answer response questions and/or observation checklist.

The candidate will observe and analyse demonstrations of physical techniques, at both elite and recreational performance, within at least two sports related skills. These demonstrations will be either live or digital/tape recorded.

The candidate will be required to identify and record information of at least three movement patterns and three biomechanical principals within each performance. The candidate will compare the elite and recreation athlete performances and identify at least four strengths and at least four weaknesses of each technique performed.

The information identified and recorded by the candidate in Outcome 2 will be used to provide a basis for the evaluation and recommendations in Outcome 3.

##### **Outcome 3**

Evidence will be generated by open-book, restricted response questions of no more than 300 words.

The candidate will be required to provide an evaluation of at least two different technical performances in sporting activity(s) and provide an evaluation of the recreational athlete's performances. Evaluation criteria must take into account information identified and recorded by the candidate in Outcome 2.

The candidate will also be required to provide recommendations, concerning movement patterns and biomechanical principals, which are designed to enhance future performances of the recreational athlete.

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 Sports Mechanics: An Introduction (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**

##### **All Outcomes:**

The movement patterns should be drawn from a sport or physical fitness related based activity.

The following movement patterns could be taken into account:

- ◆ running
- ◆ jumping,
- ◆ pushing
- ◆ pulling
- ◆ catching
- ◆ throwing
- ◆ twisting

This list is not exhaustive.

The following biomechanical principals should be taken into account:

- ◆ centre of gravity
- ◆ balance (static and dynamic)
- ◆ transfer of weight
- ◆ internal forces
- ◆ external forces

This list is not exhaustive.

Sports performance techniques observed by the candidate should be of a relatively non-complex nature. Examples of these could be:

- ◆ a penalty kick
- ◆ a tennis serve
- ◆ a golf swing
- ◆ a swimming stroke
- ◆ heading a ball
- ◆ jumping a hurdle
- ◆ volleyball block
- ◆ basketball set shot
- ◆ skiing snow plough

This list is not exhaustive.

## National Unit Specification: support notes (cont)

### UNIT Sports Mechanics: An Introduction (SCQF level 5)

#### GUIDANCE ON LEARNING AND TEACHING APPROACHES FOR THIS UNIT

Given the related nature of the performance criterion in this Unit, the tutor is strongly encouraged to deliver the Outcomes in a sequential order.

In Outcome 1, the candidate should be introduced to the main movement patterns involved in sporting performance and biomechanical principles that affect performance.

In order to facilitate visualisation of the movement patterns and biomechanical principles, examples of sporting techniques should be made available to the candidate, in order to allow them to understand and relate the patterns and principles to sporting performance.

Techniques from a variety of sporting activities should be encouraged. In accordance with the level of the Unit, the techniques should be of a relatively non-complex nature.

In Outcome 2, it is strongly encouraged that the candidate is provided with access to either 'live' performance of sporting activity or relevant electronic hardware that allows the candidate access to media containing pre-recorded athletic performance.

A minimum of four performances in total should be observed by the candidate. This could be achieved through observation of at least two performances by a recreational level athlete and at least two performances by an elite level athlete. Two separate techniques must be observed. It is at the discretion of the centre whether these techniques are from the same or different sports. However, in order to ensure accurate and realistic analysis it is imperative that the elite and recreational athletes perform the same technique(s). The candidate should be encouraged to compare the elite/model performance against the recreational performance and identify relevant strengths and weaknesses between the compared performances. The strengths and weaknesses should relate to the movement patterns and biomechanical principles observed in the performances. Normally, strengths would relate to the elite/performance and weaknesses to the recreational performance.

With regards to observation, analysis and evaluation of a recreational level athlete; there may be opportunity to integrate elements of Outcomes 2 and 3 of this Unit with the SQA Unit *Sporting Activity Participation and Performance* (SCQF level 5) (in relevant sports context).

For Outcome 3, candidate evaluation and recommendations on enhancing performance should be based on the performance of the recreational athlete.

The nature of the evaluation and recommendations should centre on the criterion that the candidate has learned in the process of studying the Unit. Therefore, emphasis should be on the movement patterns conducted in the performance and biomechanical principles that affect the performances.

The information recorded during evaluation should be used as a basis for recommendations to enhance performance.

## National Unit Specification: support notes (cont)

### UNIT Sports Mechanics: An Introduction (SCQF level 5)

#### OPPORTUNITIES FOR CORE SKILL DEVELOPMENT

There may be opportunities for Core Skill development within this Unit. The nature of this Unit may allow the candidate to develop elements of Core Skill *Problem Solving* with regards to the centre asking candidates to analyse and compare (Outcome 2) and evaluate (Outcome 3) the criterion within the Outcomes of this Unit. The candidate will also be required to provide valid recommendations based on this analysis and give descriptions supported by evidence (Outcome 3). This could further also allow the candidate to develop *IT* skills by utilising computer software for presenting information.

Further opportunities may arise for candidates to develop elements of Core Skills *Communication* and *Working with Others* if they use 'live' athlete performance during the analysis and recommendation criterion within the Unit.

*Numeracy* skills are very limited due to the specific subject matter in this Unit.

#### GUIDANCE ON APPROACHES TO ASSESSMENT FOR THIS UNIT

Assessment will be at the discretion of the centre and in accordance with SQA guidelines. Acceptable performance in the Unit will be satisfactory achievement of the Performance Criteria specified for each Outcome.

##### Outcome 1

Evidence should be generated through closed-book, short answer response questions of no more than 150 words.

The candidate should be required to identify a minimum of four movement patterns. Examples of these movement patterns can be found in the '*Guidance on the content and context for this Unit*' section of this Unit. At least one sporting technique must be related to each movement pattern identified. Examples of sporting skills would satisfy this criterion.

The candidate should be required to identify a minimum of four biomechanical principals. Examples of these biomechanical principals can be found in the '*Guidance on the content and context for this Unit*' section of this Unit. For each biomechanical principal identified, the candidate should relate the effect on performance of the biomechanical principal to at least one sports related technique/skill.

##### Outcome 2

Evidence should be generated through open-book, short answer response questions and/or observation checklist.

The candidate should observe and analyse demonstrations of physical techniques, at both elite and recreational performance, within at least two sports related techniques. These demonstrations will be either live or digital/tape recorded.

## National Unit Specification: support notes (cont)

### UNIT Sports Mechanics: An Introduction (SCQF level 5)

The candidate should be required to identify and record information of at least three movement patterns and three biomechanical principals within each performance. Examples of these movement patterns and biomechanical principals can be found in the '*Guidance on the content and context for this Unit*' section of this Unit.

The candidate will compare the elite and recreation athlete performances and identify at least four strengths and four weaknesses of each technique performed. The strengths and weaknesses should relate to the movement patterns and biomechanical principals observed in the performances. Normally, strengths would relate to the elite/performance and weaknesses to the recreational performance.

The information recorded by the candidate in Outcome 2 should be used to provide a basis for the evaluation in Outcome 3. Therefore, the tutor should ensure that candidate evidence generated in Outcome 2 directly correlates to evidence generated in Outcome 3.

#### Outcome 3

Evidence should be generated by open-book, restricted response questions of no more than 300 words.

The candidate will be required to provide an evaluation of two different technical performances in sporting activity(s) and provide an evaluation of the recreational athlete's performances. Evaluation criteria must take into account information recorded by the candidate in Outcome 2. Again, for the purpose of ensuring that the candidate has correctly interpreted and evaluated the information, the tutor should ensure that candidate evidence generated in Outcome 2 directly correlates to evidence generated in this Outcome.

The candidate will also be required to provide recommendations, concerning movement patterns and biomechanical principals, which are designed to enhance future performances of the recreational athlete.

Given the sequential nature of the assessment criteria in this Unit, the tutor is encouraged to adopt an integrative approach to assessment in the Unit. Outcomes 2 and 3 would be particularly suitable for this.

Opportunities for re-assessment should be made available throughout this Unit.

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.

#### 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](http://www.sqa.org.uk)).