Learner workbook

NCFE Active IQ Level 3 Diploma in Gym Instructing and Personal Training QN: 603/4388/6

Learner name: .....

Centre number: .....

Centre name: .....

Tutor name: .....

Start date: .....

Signatures

Learner: .....

Assessor: .....

Internal quality assurer (IQA)*: .....

External quality assurer (EQA)*: .....

*for completion if part, or all, of the evidence has been sampled by the internal and/or external quality assurer

Unit 1

Anatomy and physiology for exercise

(T/617/4001)

Overview

The unit covers the knowledge and understanding that an instructor needs to plan safe and effective group cycling sessions.

This booklet allows opportunities to provide evidence for assessment criteria 1.1 to 9.5. To support your evidence, the following websites may support you with some important information to complete the tasks:

- www.acsm.org
- www.fitnessindustryeducation.com
- www.bases.org.uk

Supporting evidence

Ensure that all the evidence is available for viewing by the internal and external quality assurer.

Unit 01 Workbook

After completing your assessment, please return it to your tutor.

Advice to all learners

- please complete your personal details and learner declaration below
- complete all questions in this assessment
- write your answers in the spaces provided
- add any additional work for any of the questions on plain paper and attach to this assessment
- if you need guidance or assistance, please contact your tutor

Learner declaration

I have completed all sections of this assessment and I confirm that this is my own work.

Signature: .....

Date: .....

Assessor:

IQA: .....

Achieved: ☐

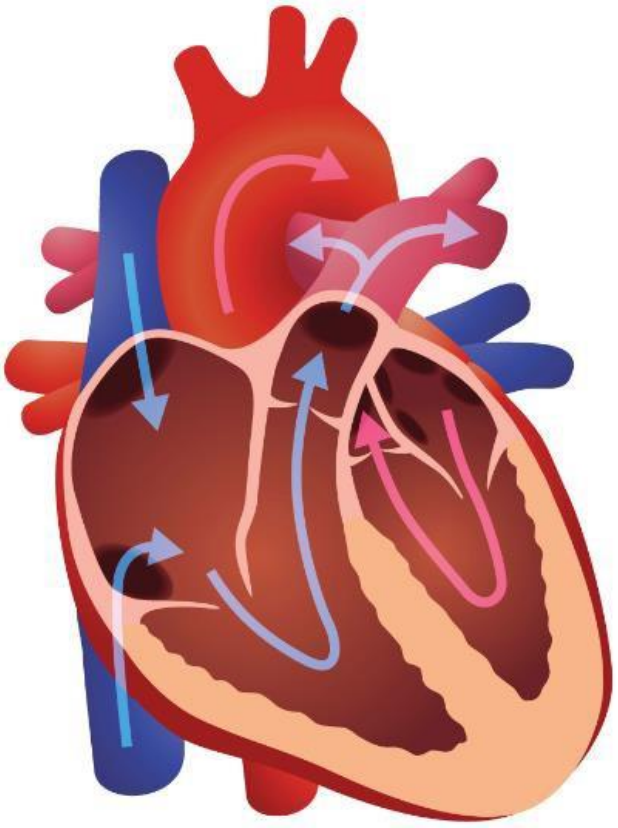
Not yet achieved: ☐

Learning outcome 1

Understand the structure and function of the circulatory system

Task 1: Describe the function of the heart. (1.1)

Task 2: Using the image and space below, describe how blood moves through the four chambers of the heart and the stages of systemic and pulmonary circulation. (1.2, 1.3)



Description of blood flow:

Systemic and pulmonary circulation:

Task 3: Describe the structure and functions of blood vessels. (1.4)

Structure	Functions

Task 4: Explain what blood pressure is and identify the different types of blood pressure classifications. (1.5, 1.6)

Blood pressure
Blood pressure classifications

Evidence sheet

Assessment criteria	Assessor comments
1.1	
1.2	
1.3	
1.4	
1.5	
1.6	

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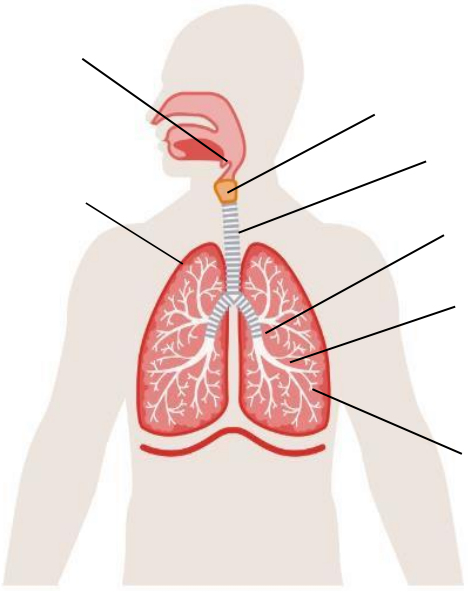
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Learning outcome 2

Understand the structure and functions of the respiratory system

Task 1: Look at the image below. Using the image and spaces provided, label and describe the structure and function of the respiratory system. (2.1)

Structure:



Function:

Task 2: Identify the main muscles involved with breathing. (2.2, 5.3)

Task 3: Describe the route of air through the respiratory system. (2.3)

Task 4: Describe the process of gaseous exchange. (2.4)

Internal respiration: **External respiration:**

Evidence sheet

Assessment criteria	Assessor comments
2.1	
2.2	
2.3	
2.4	

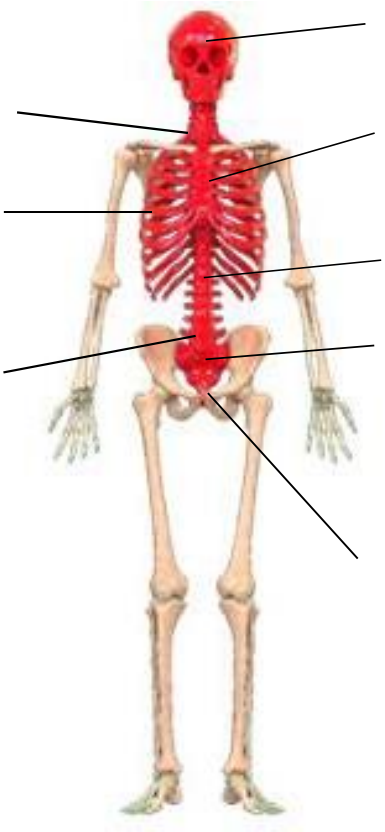
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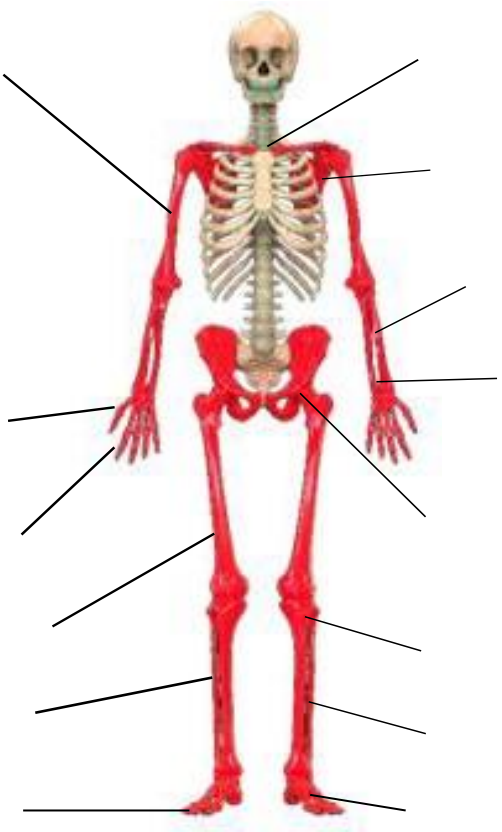
Learning outcome 3

Understand the structure and functions of the skeleton

Task 1: The skeleton provides vital structure to the human body. Below, describe the basic functions of the skeleton. (3.1)

Task 2: Using the images below, identify the bones of the axial and appendicular skeleton. (3.2)





Task 3: Identify the different classification of bones. (3.3)

1.
2.
3.
4.
5.

Task 4: Describe the main features of a long bone. (3.4)

Task 5: Describe the stages of bone growth. (3.5)

Task 6: Describe the varying types of posture in terms of: (3.6)

Postural term	Description
Curves of the spine	
Neutral spine alignment	
Movement potential of the spine	
Postural deviations	

Evidence sheet

Assessment criteria	Assessor comments
3.1	
3.2	
3.3	
3.4	
3.5	
3.6	

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Date:	

Learning outcome 4

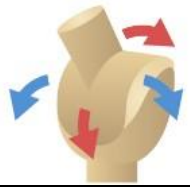
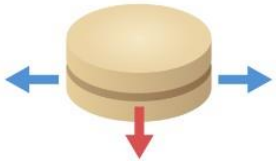
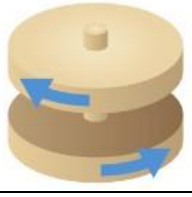
Understand joints in the skeleton

Task 1: Identify the classifications of joints. (4.1)

1.
2.
3.

Task 2: Describe the structure of synovial joints. (4.2)

Task 3a: Using the table below, identify the types of synovial joint and their range of motion.(4.3)

Synovial joint	Joint type	Range of motion available
		
		
		
		
		
		

Task 3b: Describe joint movement potential and joint actions. (4.4, 5.6)

Joint action	Description	Joint example, eg wrist	Muscle example, eg quads
Flexion and extension			
Adduction and abduction			
Circumduction			
Supination and pronation			
Plantar flexion and dorsiflexion			
Lateral flexion and reduction			
Horizontal flexion and extension			
Elevation and depression			

Task 4: Identify the body's anatomical planes of movement. (4.5)

1.
2.
3.

Task 5: Define the anatomical terms of location. (4.6)

Table heading	Table heading
Distal	
Proximal	
Anterior	
Posterior	
Inferior	
Superior	
Deep	
Superficial	
Medial	
Lateral	

Task 6: In the table below, describe the exercise variables and their effects on biomechanics and kinesiology. (4.7)

Exercise variable	Description	Effect on exercise
Levers		
Centre of gravity		
Momentum		
Force		

Evidence sheet

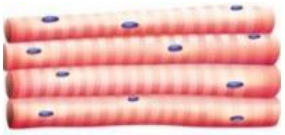
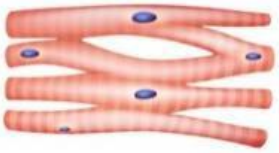
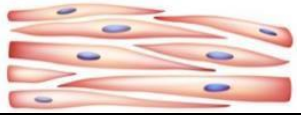
Assessment criteria	Assessor comments
4.1	
4.2	
4.3	
4.4	
4.5	
4.6	
4.7	

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Learning outcome 5

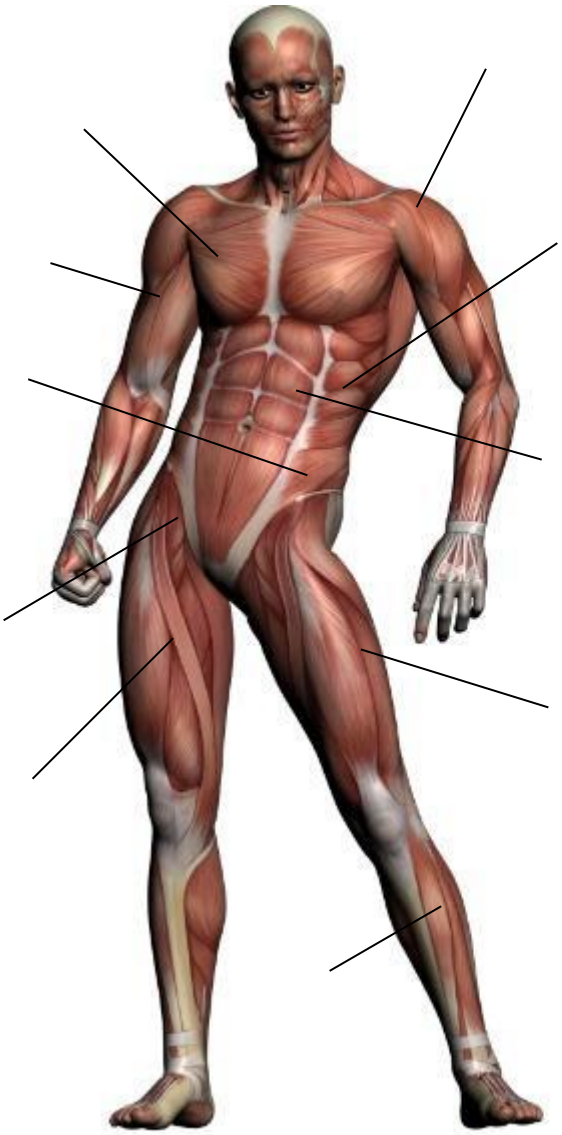
Understand the muscular system

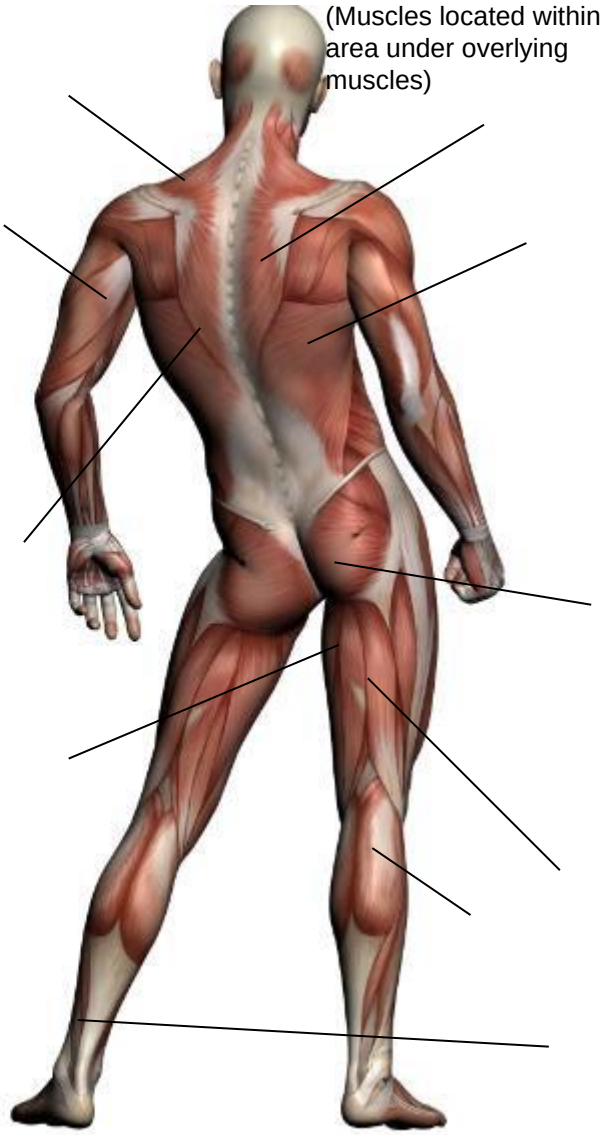
Task 1: Describe the characteristics and functions of the body's 3 types of muscle. (5.1)

Muscle cell	Muscle type	Function	Characteristic
			
			
			

Task 2: Describe the basic structure of skeletal muscle. (5.2)

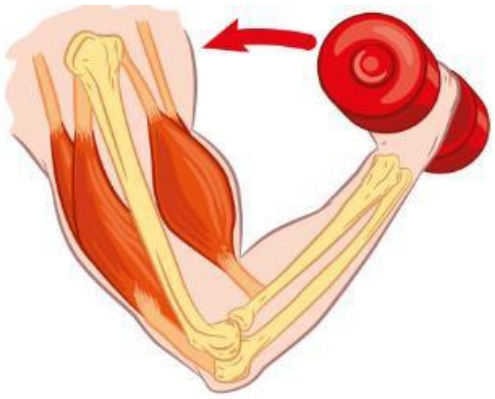
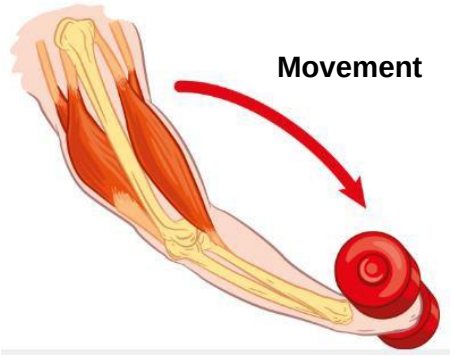
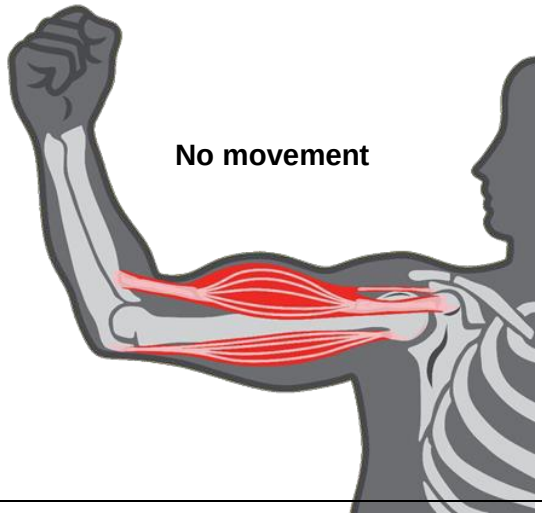
Task 3: Using the images below, identify and locate the anterior and posterior skeletal muscles. (5.3)





(Muscles located within this area under overlying muscles)

Task 4: Describe the structure and function of the pelvic floor muscles. (5.4)

Muscle action Muscle action type and description	Muscle action Muscle action type and description
Movement 	
 Movement	
 No movement	

Muscle fibre	Description of characteristics
Type 1	
Type 2	

Evidence sheet

Assessment criteria	Assessor comments
5.1	
5.2	
5.3	
5.4	
5.5	
5.6	

5.7	

Assessor signature:	
IQA signature:	
Date:	

Learning outcome 6

Understand the life course of the musculoskeletal system and its implications for special populations' exercise

Task 1: Describe the life course of the musculoskeletal system and its implications for exercise for the below special populations: (6.1)

Special population	Life course changes	Implications for exercise
Young people (13-18 years)		
Antenatal and postnatal women		
Older adults (50+ years)		

Evidence sheet

Assessment criteria	Assessor comments
6.1	

Assessor signature:	
IQA signature:	
Date:	

Learning outcome 7

Understand energy systems and their relation to exercise

Task 1: Describe how carbohydrates, fats and proteins are used in the production of energy. (7.1)

Macronutrient	Description
Carbohydrate	
Protein	
Fat	

Task 2: Explain the use of the 3 energy systems during aerobic and anaerobic exercise. (7.2)

Table Energy system	Explanation
ATP-PC	
Aerobic	
Anaerobic glycolysis	

Task 3: Identify the by-products of the 3 energy systems and describe their role in muscle fatigue. (7.3)

By-product	Role in muscle fatigue

Task 4: Describe the effect of endurance training on the body's use of fuel for exercise. (7.4)

Task 5: Define anabolism, catabolism and excess post-exercise oxygen consumption (EPOC). (7.5)

Anabolism	
Catabolism	
EPOC	

Evidence sheet

Assessment criteria	Assessor comments
7.1	
7.2	
7.3	
7.4	
7.5	

Assessor signature:	
IQA signature:	
Date:	

Learning outcome 8

Understand the nervous system and its relation to exercise

Task 1: Describe the role and functions of the nervous system. (8.1)

Role	Functions

Task 2: Describe the principles of muscle contraction. (8.2)

Task 3: Explain the 'all or none law'/motor unit recruitment. (8.3)

Task 4: Identify how exercise can enhance neuromuscular connections and improve motor fitness. (8.4)

Evidence sheet

Assessment criteria	Assessor comments
8.1	
8.2	
8.3	
8.4	

Assessor signature:	
IQA signature:	
Date:	

Learning outcome 9

Understand the structure and function of the digestive system

Task 1: Describe the function of each section of the digestive system. (9.1)

Table heading	Table heading
Mouth	
Oesophagus	
Stomach	
Small intestine	
Large intestine	

Task 2: Describe how fats, proteins and carbohydrates are digested and absorbed. (9.2)

Macronutrient	Enzymes used	Time scale	Location
Fat			
Protein			
Carbohydrate			

Task 3: Describe the role of dietary fibre in the maintenance of gut function. (9.3)

Task 4: Describe the role of the liver and pancreas in digestion. (9.4)

Task 5: Explain the importance of maintaining fluid levels for health and exercise performance. (9.5)

Level of performance	Explanation	Role of water
Health		
Exercise performance		

Evidence sheet

Assessment criteria	Assessor comments
9.1	
9.2	
9.3	
9.4	
9.5	

Assessor signature:	
IQA signature:	
Date:	

Well done!

You have completed all the tasks. Hand them in to your tutor for feedback.

Feedback form

Assessment decision

Achieved ☐ Not yet achieved ☐

Comments/feedback

Assessor signature:		**Date:**
Learner signature:		**Date:**
IQA signature:		**Date:**
EQA signature:		**Date:**

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