Unit 3 Worksheets

Unit Name: Monitoring the Activity of the Human Body		Unit Number: Unit 3
Cover Sheet Title: Monitoring Cardio-Respiratory Performance		
Date Set:	**Due Date:**	
Assessment Objective(s): AO1, AO2, (AO3)		
Brief: In this learning activity you will investigate how to take someone's pulse and assess their current level of fitness using their pulse-rate data. You will find out what you can about the technique of electrocardiography and the way it may be used in diagnosis. By the end of this activity you should be able to recognise ECG traces for normal and abnormal heart activity.		
Tasks: **Task I** Compare the pulse rate of fit and unfit individuals before and after exercise. **Task II** Write a detailed report on the use of electrocardiography in health care. **Task III** Complete an assessment unit that targets information on ECG traces and their use in predicting probable physiological status.		
Resources:		

Worksheet 1

Unit Name:	Unit Number:
Monitoring the Activity of the Human Body	Unit 3
Worksheet Title:	**Worksheet Number:**
The effect of exercise on cardio-respiratory performance in fit and unfit individuals.	3.1

Date Set:	Due Date:

Assessment Objective(s): AO3a, AO3b, AO3c, (A02b)

Brief:

Heart disease accounts for the greatest number of premature deaths in most industrial countries.

Physical inactivity is thought to be one of the primary risk factors for cardiovascular disease.

The effect of exercise on cardiovascular efficiency can be assessed by measuring pulse rate.

Task:

Compare the pulse rate of fit and unfit individuals before and after exercise.

In this task you are required to:

- Identify hazards and carry out a risk assessment
- Follow set procedures
- Record any observations and measurements
- Process and evaluate results.

Max marks possible for this task: 10 or 11

This task should be marked to a maximum of 21 and will need to be divided by two and the mark added to that of a second practical task.

(NB in addition you can gain AO2b if you complete:

- treatment of results

Max marks possible for this task: 4)

Resources:

The complete A –Z Physical Education handbook, James, Thompson and Wiggins
ISBN 0-340-77213-1

This assignment **may** form part of your portfolio for Unit 1.

3.1 The Effect of Exercise on Cardio-Vascular Performance in Fit and Unfit Individuals

TASK

Measure and compare the pulse rate of fit and unfit individuals before and after exercise.

PRACTICAL INSTRUCTIONS

AO3a, b

1. Complete the risk assessment before starting the investigation.
2. Ask your teacher to check your plans before you start.
3. The individuals under investigation should be invited to sit for **five** minutes.
4. During this time explain what they are expected to do and what you will do.
5. After **five** minutes, measure and record their resting pulse rate (count for 15 seconds).
6. Each individual should be invited to perform the same, pre-determined, step test for **five** minutes.
7. Measure and record their pulse rate immediately the exercise finishes and at one minute intervals until their pulse rate returns to the resting rate.

TREATMENT OF RESULTS

AO2b

1. Calculate the resting pulse rate value/beats per minute.
2. Calculate the post exercise-pulse rate values/beats per minute.
3. Plot graphs of pulse rate against time.
4. Look up data for age-related, pre- and post-exercise pulse rates.

EVALUATION OF RESULTS

AO3c

Comment on:

*   The method
*   The results that you obtained for fit and unfit individuals
*   Possible extension to the investigation.

Worksheet 2

Unit Name:		Unit Number:
Monitoring the Activity of the Human Body		Unit 3
Worksheet Title:		**Worksheet Number:**
Electrocardiography		3.2
Date Set:	**Due Date:**	
Assessment Objective(s): AO1 and AO2		

Brief:

Find out what you can about the technique of electrocardiography and the way it may be used in diagnosis. By the end of this task you should be able to recognise ECG traces for normal and abnormal heart activity and give a simple explanation as to what they indicate.

Task:

Produce an illustrated report on the use of electrocardiography in the investigation of cardiovascular function.

Your report should include:

- An explanation of what an electrocardiogram is
- When electrocardiography is used
- A diagram or photograph of equipment used
- A diagram showing placement of cardiographic electrodes on patient
- A graph showing a classical, normal, labelled ECG trace to include the following elements: P wave, PR interval, QRS complex, QT interval and T wave
- A simple explanation of the elements of an ECG trace
- Examples of ECG traces for normal heart, tachycardia, bradycardia, sinus arrhythmia and ventricular fibrillation

Resources:

This task is for use in preparation for the external examination for Unit 3 and **does not** form part of a portfolio.

Unit Name:		Unit Number:
Monitoring the Activity of the Human Body		Unit 3
Worksheet Title:		**Worksheet Number:**
Electrocardiography and diagnosis – assessment.		3.3
Date Set:	**Due Date:**	
Assessment Objective(s): AO1, AO2		
Brief: The question presented in this task is one example of the way the topic may be assessed in the written paper for Unit 3.		
Tasks: • Spend some time reviewing the information you have gathered in preparing the task in assignment 3.2. • Attempt this task without any reference material. • Check your work against your reference material to establish where your knowledge and understanding may be lacking. • Correct your response where necessary.		
Resources: Assessment material attached.		

This task is for use in preparation for the external examination for Unit 3 and **does not** form part of a portfolio.

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As part of the training the doctor must learn about electrocardiogram (ECG) traces.

Fig. 1.2 shows ECG traces for a number of patients. Additional information about each condition has also been supplied.

Trace for patient **A**
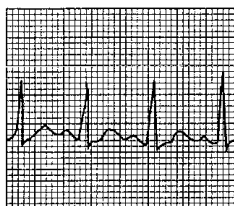
The pulse rate of patient A is greater than 100 beats min^{-1}

Trace for patient **B**
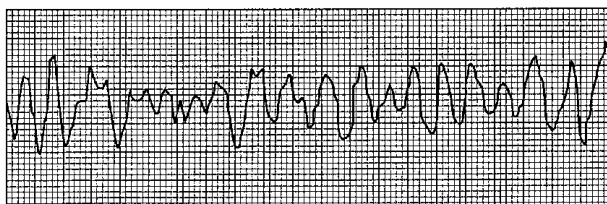
The pulse rate for patient B is less than 60 beats min^{-1}.

Trace for patient **C**.
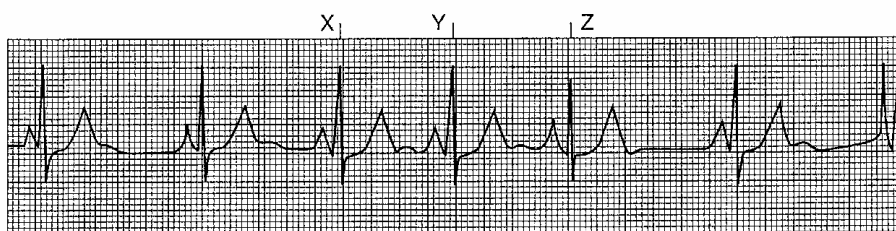
The pulse of patient C is 60–100 beats min^{-1}.

Trace for patient **D**.
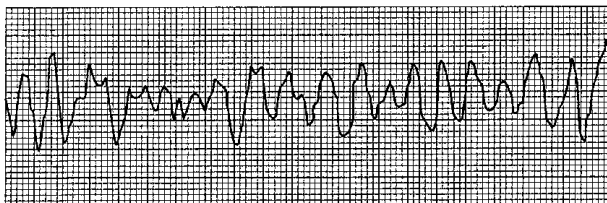
The pulse of patient D is very irregular or absent.

Fig. 1.2

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(b) Using the information shown in Fig. 1.2, complete Table 1.1. One has been done for you.

Table 1.1

patient	condition
	bradycardia
A	sinus tachycardia
	sinus arrhythmia
D	

[3]

(c) Suggest a cause of sinus tachycardia, as shown in patient A.

....[1]

(d) Athletes usually show bradycardia. Suggest **two** reasons why bradycardia may be useful to athletes.

1. ....

....[1]

2. ....

....[1]

(e) Look at the trace for patient C.

(i) Describe the pattern shown by peaks X to Z.

....

....[1]

(ii) Suggest **two** reasons for this pattern.

1. ....

....[1]

2. ....

....[1]

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Patient D has a very irregular pulse, or at times, no pulse at all.

(f) Suggest **three** reasons for this.

1. ....[1]

2. ....[1]

3. ....[1]