Human Health & Physiology
Specimen ISA– *Pulse Rate*

Teachers' Notes

This ISA relates to Unit 1 Section 3.3.4:

Blood and the Circulatory System

Area of investigation
This work should be carried out during the teaching of the section relating to:
The effects of exercise on the circulatory system:

Candidates should be able to use practical and enquiry skills to:

- *investigate the effect of exercise on the pulse rate*
- *understand the need for controlling variables*
- *understand the difficulty of controlling variables when using human subjects*
- *understand the principles of a fair test*
- *distinguish between the independent and dependent variable*
- *select a suitable range of values for the independent variable*
- *present data in a suitable form*
- *draw conclusions*
- *evaluate the method used and suggest possible improvements eg choice of measuring instrument, range of values chosen, number of repeats.*

RISK ASSESSMENT
It is the responsibility of the centre to ensure that a risk assessment is carried out. Your attention is particularly drawn to the dangers associated with using hot water.

Part 1: The Practical Work
For this part of the investigation candidates may work individually or in groups.

The teacher should complete the Explanation sheet. This should be included with the sample of candidates' work which will be sent to the moderator.

Instructions of a general nature may be given to candidates, but these must not be so prescriptive as to preclude the candidates from making their own decisions.

Candidates should be given the opportunity to carry out an investigation concerning the effect of exercise on the pulse rate.

It is recommended that the investigation is put into an applied context. For example 'As part of a fitness campaign for a sports activity you are required to investigate how exercise affects the **resting** pulse rate.'

There may be an opportunity to work in conjunction with the PE or Sports Science department. In this case, candidates may wish to carry out an extended investigation over several weeks in order to investigate the effect of an exercise programme on fitness. However, this is not essential; candidates may simply investigate the short term effects of exercise on the pulse rate, or on the time taken for the pulse rate to return to its normal resting rate after exercise.

A suggested method is described below, but this should not preclude centres from adapting this method to suit their own needs.

- the simplest method would be to record the pulse at the wrist for one minute whilst using a stopwatch. The pulse at rest should be taken before exercise.
- candidates should choose a sensible range which explores **either** the effect of different exercises **or** the effect of changing the duration of the same exercise.

Candidates should carry out a number of repeats in order to be able to calculate a mean.

Candidates need to fill in the table they have produced prior to the practical, and produce a graphical representation of their results. (Refer to the Teachers' Guide for further clarification.)

Part 2: The Data Processing
For this part of the investigation candidates must work individually under direct supervision.

Each candidate should draw up his or her own table of results and should process the data in an appropriate way eg charts, graphs, diagrams, line of best fit if appropriate.

The candidates' work should be collected by the teacher at the end of this session and returned to the candidates only when they undertake the subsequent ISA.

Candidates' work must **not** be annotated with additional information, either by the teacher or the candidate, which would give them an unfair advantage during the ISA, eg the use of the terms independent/dependent variable.