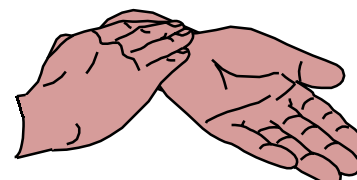


Heart Rate



Measuring your heart rate

You can measure your heart rate anywhere that a major artery is relatively close to the surface of your skin. The easiest places are on the front of your forearm, just above your wrist on the thumb side, and on the side of your neck, about half way between your chin and ear.



Try now to locate your pulse in one of these places using the tips of your index and middle fingers. You should feel a gentle, regular beat. Use a stopwatch or watch with a second hand to count how many beats there are in one minute. This is your heart rate.

In most situations, taking your pulse rate over a minute will give a reasonably accurate result, but if you want to take your pulse after exercise you should do so over a much shorter time interval. After exercise your pulse rate will be changing rapidly. To get a reasonably accurate result, start immediately after the exercise and count the number of beats in 10 seconds. Multiplying by six will then give your heart rate.

Carry out an investigation involving heart rate.

In your investigation try to answer one of the questions given below, or think of a question or hypothesis of your own. (Discuss your plans with your teacher.)

- Exercise increases heart rate. How do different types of exercise compare? Does the amount of time spent exercising make a difference?
- Do relaxation techniques reduce your heart rate?
- How does listening to different types of music affect your heart rate?
- Does heart rate increase in stressful situations?
- Does the caffeine in coffee, tea and cola drinks have an effect on heart rate?
- Does heart rate vary with age or sex?

In your assignment you should:

- decide and state clearly the aims of your investigation
- use a suitable sample and method to collect the data you need
- devise and use a suitable data collection form
- use a table or spreadsheet to record your results
- use statistical diagrams and measures to summarise and display your findings
- check your work
- summarise your findings and draw conclusions.



Teacher Notes

Unit Intermediate Level, Handling and interpreting data

Notes

Students will need to know how to measure pulse rate and have access to stopwatches or other means of measuring time accurately.

The assignment is intended to provide some of the evidence listed in section 1 of the coursework portfolio requirements (reproduced below).

What you need to produce	You must:
<p>1</p> <p>Reports of at least two investigations you carry out into situations in which you show your use of statistical techniques, measures and diagrams.</p> <p>In the totality of your two reports you should :</p> <ul style="list-style-type: none"> • state clearly the aims of your investigation • choose a suitable sample for your investigation • select the most appropriate data you need to collect • devise and use an appropriate data collection form • use a spreadsheet to record the results of your data collection • use tables to present <ol style="list-style-type: none"> (i) raw data (ii) grouped data • use <ol style="list-style-type: none"> (i) measures of location and spread (ii) statistical diagrams to summarise and compare your raw and grouped data • use probability measures, if appropriate, to calculate, describe and explain the likelihood of an event(s) occurring for the sample of your investigation and project your findings to a larger sample • investigate the effect of using at least two different groupings of part of your data on diagrams and measures • draw conclusions and summarise your findings 	<ul style="list-style-type: none"> • include written evidence of all mathematical analysis and computation • show evidence that in places you have used both estimation and checking to ensure that your work is accurate. • present your hypothesis, raw and processed data clearly using tables where appropriate • if using a questionnaire, use questions that are relevant, not repetitive, clear and unbiased, with a sample of at least 25 • show that you only collected data which is meaningful to your investigation • present diagrams that are relevant, clear and accurate • express probabilities in appropriate forms • show an understanding of the limitations involved when you project your findings to a larger sample • draw conclusions that are valid and relevant in the light of your original hypothesis • make qualitative reference to the accuracy of your findings in the light of any errors that there may have been in your data and taking account of your sample size

These portfolio requirements should be discussed with students before they start this activity. You could also have a general discussion about hypotheses that could be tested. Asking students to plan an investigation would give an opportunity for them to produce some of the portfolio evidence they need, but you will obviously need to check that these plans are practical and will give the data they need before they proceed. You may decide to pick out just one or two of the best/most practical suggestions for use in the actual investigation. Students can be asked to repeat experiments a number of times or pool data for analysis.

