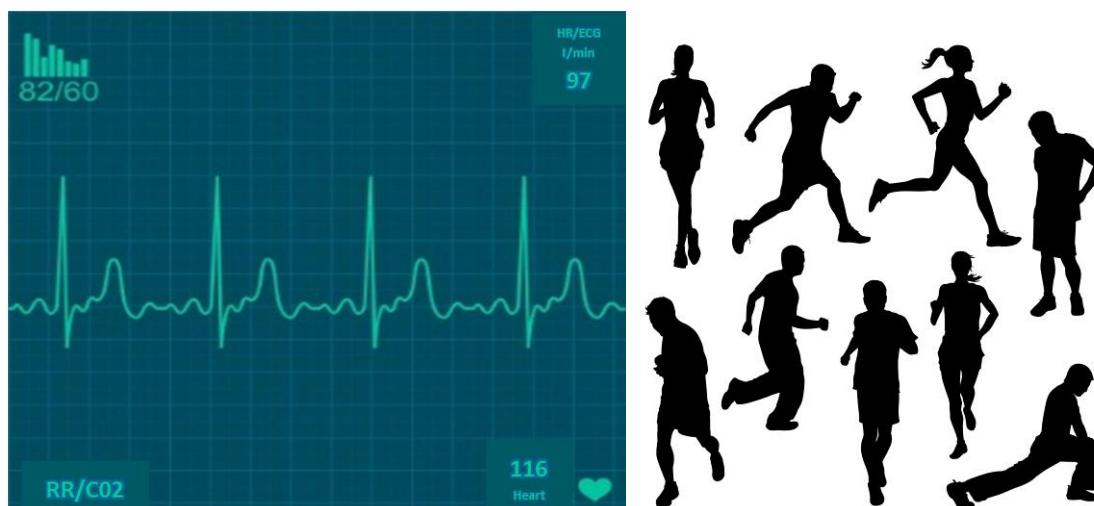




Llywodraeth Cymru
Welsh Government

Heartbeat

The normal resting heart rate for adults ranges from 60 to 100 beats per minute.



Research has shown that, for health reasons, when exercising or training for keep fit or sport a person's heart rate should not exceed a maximum value and exercise should be stopped if this value is reached. The same researchers found that the maximum safe heart rate during exercise varied depending on the person's age. They showed this as a mathematical relationship which could be used to calculate the 'recommended maximum heart rate' for people of different age.

$$\text{Recommended maximum heart rate} = 220 - \text{age}$$

More recent research suggests that this relationship is better expressed as:

$$\text{Recommended maximum heart rate} = 208 - (0.7 \times \text{age})$$

The task

A newspaper article has challenged the change in method of calculating the recommended maximum heart rate.

Investigate both relationships and show, using the evidence you have collected, how this change will affect different age ranges. Also illustrate how the relationships can be more clearly illustrated on a sketch graph of recommended maximum heart rate against age.

Using your knowledge of science, can you give reasons for the following?

- Why has research shown that, for health reasons, when exercising or training for keep fit or sport a person's heart rate should not exceed a maximum value and exercise should be stopped if this value is reached?
- Why the maximum recommended heart rate should be different for different ages?