

## Pulse

You can feel the pulse in the wrist or neck. It is used to measure how fast the heart beats in beats per minute (bpm). Pulse rate is a physiological indicator of the level of a person's health and physical fitness.

### Resting pulse rates

A **resting pulse rate (RPR)** is measured when a person has been still for about five minutes. The pulse can be measured placing fingers on the inside of the wrist at the base of the thumb and counting the beats for one minute. NHS guidance states the average RPR for an adult is between 60 and 100 beats per minute. Lower or higher rates are abnormal and may indicate health problems.

**Gender** – men often have a lower RPR than women

**Age** – babies and children usually have a higher RPR than adults. For example:

- babies 110–160 bpm
- children 80–120 bpm
- adult 60–100 bpm

### Factors that affect RPR

**Size** – overweight people usually have a higher RPR than lean people

**Level of physical activity** – fitter people often have a lower RPR pulse rate than less active people. For example, an athlete may have an RPR of 40–60 bpm

### Pulse rate during exercise

Pulse rate increases during exercise.

- ✓ The maximum number of heart beats per minute is 220 minus a person's age.
- ✓ A healthy pulse rate during or just after exercise is between 60% and 80% of the maximum.

### Recovery after exercise

Pulse rate gradually returns to RPR after exercise.



After exercise, an athlete's pulse rate returns to their RPR more quickly than in someone who is unfit. The athlete has a faster recovery rate.

### Abnormal readings

Abnormal readings are those above guideline levels when at rest (RPR) or during exercise. Risks arising from raised pulse rate:

- 👉 Dizziness
- 👉 Heart attack
- 👉 Stroke
- 👉 High blood pressure

### Ways to lower RPR

- 👍 Regular exercise
- 👍 Healthy diet
- 👍 Lower stress levels
- 👍 Stopping smoking

### Now try this

Pauline is 65 and healthy.

- 1 What should Pauline's maximum RPR be?
- 2 What is the expected range of Pauline's pulse rate when exercising?

To work out the maximum RPR and healthy pulse rate during or just after exercise, look back over this page.

## Blood pressure

Blood pressure is an important indicator of health. Blood pressure that is too high puts strain on the heart.

### Blood pressure readings

Blood pressure is the pressure exerted by blood against the artery walls. It is measured in millimetres of mercury (mm Hg) and is shown as two numbers:

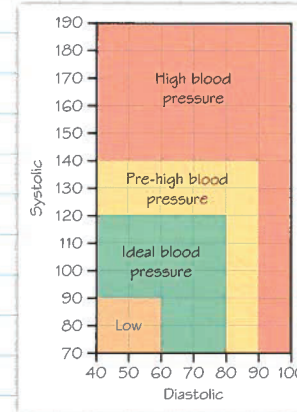
- **Systolic pressure** (the top number) is the maximum pressure in the blood vessels as the heart pushes out blood.
- **Diastolic pressure** (the bottom number) is the minimum pressure in the vessels when the heart relaxes between beats.



Blood pressure can increase with stress, so measurements should be taken several times and an average recorded.

### Published guidance

The NHS and Blood Pressure UK provide charts giving guidance on interpreting blood pressure readings.



### Interpreting readings

- ✓ High blood pressure is 140/90 mm Hg or above.
- ✓ Low blood pressure is 90/60 mm Hg or lower.
- ✓ Only one number (systolic or diastolic) has to be higher or lower than the guidelines to be abnormal.

Blood pressure chart for adults

### Abnormal readings

Risks of **hypertension** (high blood pressure) are:

- heart disease
- kidney disease
- stroke
- dementia.

In many people, **hypotension** (low blood pressure) does not cause health problems and can indicate a healthy heart. However, in some people it may cause dizziness. Low blood pressure can result from health conditions such as diabetes. Low blood pressure can link to aging or result from the use of some medications.

### Possible causes of high blood pressure

- Lifestyle – smoking, use of alcohol, drugs (look at pages 9–11)
- Diet – unhealthy diet, high salt intake (look at page 5)
- Genetic inheritance – people can be predisposed to high blood pressure (look at page 2)
- Lack of exercise (look at page 28)
- Being overweight (look at page 6)
- Stress (look at page 14)

Changing to a healthy lifestyle is one of the best ways to reduce blood pressure.

### Now try this

Betty's blood pressure reading is 130/85.

Give three recommendations to help Betty lower her blood pressure.

Betty cannot change her genetic inheritance, but she can change her lifestyle.