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Hypertension and exercise

What is hypertension?

Blood pressure (BP) refers to the pressure in the large arteries when the main pumping chamber of the heart — the left ventricle — is at maximal contraction (systole) and relaxation (diastole). BP is usually presented as two numbers: the higher, systolic BP (normally about 120 mmHg); and the lower diastolic BP (normally about 80 mmHg). The two pressures are usually expressed together, for example '120 over 80'. These values represent the pressure that the heart, kidneys, eyes and arteries are exposed to. Excessively high BP is called hypertension. Hypertension is a major risk factor for chronic kidney disease, heart failure, cardiovascular events (e.g. heart attacks and strokes) and early death. Hypertension may not cause any symptoms, which is why it is sometimes referred to as a 'silent killer'.

How is blood pressure monitored?

Correct diagnosis and management of hypertension relies on careful measurement of BP. BP is usually measured with automatic devices, which are available in pharmacies. Buyers should ensure that the device has been tested for accuracy before purchase (1). A well-fitting cuff for the upper arm is vital — too small a cuff will overestimate the true BP and too large a cuff will underestimate true BP. Some doctors still use the older method to measure BP, which involves listening with a stethoscope to the sounds in the artery as the cuff is slowly deflated.

Quite often, a person's BP is higher when measured by a doctor than if measured at home — so-called white coat hypertension. This effect is probably caused by anxiety associated with having BP measured by a doctor. For this reason, some experts recommend that the BP recorded by doctors should not be the only measurement used to manage patients with hypertension (2).

People can monitor their BP at home for extended periods. Specialists also sometimes monitor the BP continuously for 24 hours while the person goes about daily activities.

The higher the BP, the higher the risk of cardiovascular events. Therefore, doctors prescribe medication and lifestyle changes (e.g. diet and exercise) for people with high BP to reduce the risk.

Hypertension is described on a graded scale from mild to severe (see table below). A BP of 180 over 110 (or higher for either pressure) is classed as severe hypertension (grade 3).

Blood pressure category	Systolic BP (mmHg)	Diastolic BP (mmHg)
Normal	<120	<80
High-normal	120—139	80—89
Grade 1 hypertension (mild)	140—159	90—99
Grade 2 hypertension (moderate)	160—179	100—109
Grade 3 hypertension (severe)	≥180	≥110

Why is exercise important?

Regular aerobic exercise has a variety of effects that protect against heart disease and diseases of the blood vessels, including high BP. On average, exercise reduces blood pressure by about 6–7 mmHg. Scientific studies with large numbers of volunteers have

shown that, if systolic BP is reduced by 5 mmHg, deaths from strokes decrease by 14% and deaths from coronary heart disease (i.e. blocking of the blood vessels that supply the heart) decrease by 9%. These results emphasise why lifestyle changes, including regular exercise, are important first steps in preventing and treating hypertension.

How does exercise affect blood pressure?

Usually, BP rises and falls as people go about their daily activities. During aerobic exercise (i.e. exercise for heart and lung fitness), systolic BP increases as the exercise intensity increases — the heart works harder to pump more oxygenated blood to the muscles. At the same time, diastolic BP remains relatively stable and may even decrease slightly. On average, men have higher BP than women during aerobic exercise. Some people have an abnormal, extremely high spike in BP when they exercise (exercise hypertension), which is probably an early indicator of poorly controlled BP and, therefore, a higher risk of future problems. This should **not** be interpreted as 'exercise is bad for you', because this is definitely not true. Low BP during exercise may also signal serious heart disease and requires investigation.

Regular physical activity is the first treatment recommended to lower BP and improve cardiovascular health, both in the general population and in those people with hypertension (3, 4). Importantly, exercise is usually safe and beneficial whether or not BP-lowering (antihypertensive) medication is used. However, chest discomfort, irregular heart rhythm or abnormal breathlessness when exercising can indicate underlying heart disease and should be further investigated. Also, people with a resting systolic BP of 180 mmHg or more, or a resting diastolic BP of 110 mmHg or more, should postpone their exercise program and seek medical advice.

What type and amount of exercise is best?

The exact amount and type of exercise that is best for BP control is not really known. However, scientific studies support that regular aerobic exercise reduces resting BP and also reduces BP during light exercise and daily activities. Additionally, aerobic exercise protects against developing hypertension in the future (5). These effects occur in both men and women, with normal or raised BP.

Resistance exercise training (i.e. weights training) also produces small, but measurable, benefits for BP. However, heavy or very intensive weight training dramatically increases BP in the short term and should be avoided. Generally, perform resistance exercises at a controlled, slow to moderate speed, through the full range of motion and without holding your breath.

Current recommendations on the type, intensity and duration of exercise for people with hypertension are available on the ESSA website (www.essa.org.au).

Reference and related information

National Heart Foundation www.heartfoundation.org.au

Exercise & Sports Science Australia www.essa.org.au

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