

# Chronic heart failure and exercise

## What is Chronic heart failure?

Chronic heart failure (CHF) is a life-threatening condition that occurs when the heart no longer effectively pumps blood to the lungs and the rest of the body. People with CHF are breathless and tire easily, especially during exercise. Worsening or poorly managed heart failure may cause fluid to build up in the lungs, known as acute pulmonary oedema, or 'water on the lungs', especially when lying down; this is accompanied by severe breathlessness, frothy sputum and coughing, and requires urgent medical attention. Fluid may also build up in other areas, causing peripheral oedema (puffy, swollen ankles) and venous congestion (e.g. prominent jugular veins) which may cause the veins to bulge out in the neck. CHF has many causes. The most common ones are myocardial infarction ('heart attack'), hypertension (high blood pressure) and diabetes (high blood sugar).

## How is CHF classified?

Doctors classify CHF depending on the type and severity of the symptoms; e.g (1) no symptoms of disease, (2) symptoms on moderate exercise, (3) symptoms on mild exercise, or (4) symptoms even when at rest. Another classification is systolic heart failure (SHF where the heart fails to pump properly) and diastolic heart failure (DHF where the heart muscle is stiff and so fails to fill properly). SHF is diagnosed as the percentage of blood that is ejected from the pumping chambers (ventricles), and DHF is diagnosed by measuring the relaxation and filling rates of the ventricles.

## How is CHF treated?

For people with CHF, a combination of medical and lifestyle management usually reduces symptoms, improves quality of life, slows the progression of the disease and prolongs life. A number of factors increase the risk of heart diseases, including CHF. Controlling these 'cardiovascular risk factors' is very important to prevent and manage CHF. This includes lowering levels of blood cholesterol and other fats, lowering blood sugar levels and blood pressure, limiting alcohol intake and stopping smoking.

Most people with CHF are prescribed drugs called 'ACE inhibitors' that lower the heart's workload, prevent progression of the disease and improve quality of life. Drugs called 'diuretics' reduce the fluid build up. Others called 'beta blockers' also lower the heart's workload and blood pressure. For acute episodes of CHF, the drug digoxin is given to boost the pumping action of the heart and prevent some disturbances in heart rhythm. Pacemakers are sometimes fitted to control rhythm disturbances, or other drugs may be prescribed for similar reasons. Some patients with severe CHF have surgery to fit an extra pump to help the heart or to reduce the size of a swollen heart. Patients should also control their salt and fluid intakes and follow a healthy, low-fat, low-sugar diet with plenty of fresh fruit and vegetables. In addition, a properly planned exercise program is very beneficial.

## How does exercise benefit people with CHF?

Exercise has many benefits for people with CHF. Exercise:

- increases cardiovascular function ( $VO_{2peak}$ ) that is highly linked to improved clinical outcomes;
- increases muscle strength and endurance;
- improves ability to function and undertake the activities of daily living;

- improves quality of life and reduces symptoms of depression;
- improves cardiovascular risk factors by lowering the levels of blood cholesterol and other fats, blood sugar, and by lowering blood pressure;
- reduces the occurrence and severity of the signs and symptoms associated with CHF; and
- slows the rate at which the disease progresses, which reduces both the number of times patients are hospitalised and the death rate from CHF.

Thus exercise acts as a 'poly-pill' that improves physical and clinical fitness and mental health.

## What is important when people with CHF exercise?

As CHF is a serious condition, a number of factors must be considered when exercise programs are designed for people with CHF:

- people with CHF must be medically stable before starting an exercise program;
- generally, people with CHF have more energy in the morning, particularly midmorning;
- the exercise program should be enjoyable to be sustained long term, and include some usual daily activities such as walking to the shops;
- before starting a program, properly supervised exercise tests are required to determine safe and effective types, amounts and levels of intensity of exercise. Tests include any or all of the following:  $VO_{2peak}$  prediction, heart rate and rhythm, blood oxygen content (called 'oxygen saturation') and blood pressure, muscle strength and endurance tests and functional capacity assessments;
- the program should include both aerobic training for heart and lung fitness and resistance exercise training (weight training);
- low blood pressure, rather high blood pressure, is a more common problem for people with CHF, especially during exercise or recovery from exercise. Low blood pressure can cause symptoms of light-headedness, fainting, sweating, anxiety, distress and disturbances in heart rhythm;
- people with CHF *and* diabetes should monitor their blood sugar levels before and after exercise; and
- people with CHF should adhere to their management plans

## How much exercise should people with CHF do?

No particular amount of exercise is the 'right amount' for people with CHF. Programs must always be tailored to a person's medical status, medical treatment, exercise capacity and lifestyle goals. Usually, however, aerobic endurance exercise should be performed on most days of the week for between 20 and 60 minutes, at an intensity that suits the person's condition. This exercise can be taken in one session or broken up into smaller parcels of exercise and physical activity throughout the day. Resistance training should be performed on 2–3 days a week, with 8–10 different exercises for the major muscle groups. Two or three sets of 8–12 repetitions, with weights that require a moderate to high effort (e.g. 50-80% of one repetition maximum), are appropriate. An alternative to weights training is a program of usual daily activities that incorporates exercises for strength and endurance, mobilisation and flexibility. Good examples are gardening, light housework, walking to the shops, and carrying the shopping home.

## Related information and references

*Exercise & Sports Science Australia (ESSA): [www.essa.org.au](http://www.essa.org.au)*

*National Heart Foundation of Australia: [www.heartfoundation.org.au](http://www.heartfoundation.org.au)*

1. *American College of Sports Medicine. (2010). Resource manual for ACSM's guidelines for exercise testing and exercise prescription (6th ed). Baltimore: Lippincott, Williams & Wilkins.*
2. *American College of Sports Medicine. (2002). ACSM's exercise management for persons with chronic diseases and disabilities (2nd ed). Champaign, IL: Human Kinetics.*
3. *Pina IL, Apstein CS, Balady GJ, et al. (2003). Exercise and heart failure: a statement from the American Heart Association Committee on exercise, rehabilitation, and prevention. Circulation 2003; 107(8): 1210–25.*
4. *Selig S, Levinger I, Williams A, et al. Exercise and Sports Science Australia position statement on exercise training and chronic heart*

