

Kidney disease

What is kidney disease?

The main functions of the kidneys are to remove waste products and excess water from the body and to produce important hormones such as erythropoietin (which helps form red blood cells). A loss of these kidney functions causes kidney disease; with many factors contributing such as diabetes, high blood pressure, blood vessel disease, and inflammation of the blood vessels in the kidney. In Australia, about 1.4 million people have poor kidney function.

How does exercise help people with kidney disease?

Only 10 studies of about 200 patients in total have focused on the effects of exercise training in people with chronic kidney disease. A review of these studies concluded that exercise training increases aerobic fitness (the ability to exercise for a long time), improves muscle strength and function, and decreases blood pressure in people with chronic kidney disease (1). By contrast, more than 30 studies have looked at exercise in end-stage kidney disease. A systematic review and meta-analysis (the highest level of evidence) found that exercise training improves aerobic fitness and health-related quality of life, and counteracts sarcopenia (loss of muscle mass) in people with end-stage kidney disease (2).

Why is regular exercise important?

Exercise has many benefits for all people including:

- help in losing weight and managing body weight;
- improving blood pressure control;
- reducing the risk of diabetes and improving glucose control in people with diabetes;
- improving muscle strength, physical function, and bone density
- reducing anxiety and depression; and
- reducing the risk of falls by improving muscle strength and function.

Is exercise safe for people with kidney disease?

People with kidney disease can exercise safely, provided that the exercise program begins slowly and progresses gradually (discussed further below), and that all exercises are performed using the correct technique. Because many people with kidney disease also have other associated conditions, exercise-training programs should be written and delivered by an accredited exercise physiologist who is competent to recognise the exercise needs of people with kidney disease and possible diabetic complications.

What type of exercise is recommended?

A combination of aerobic (endurance), resistance (strength) and flexibility (stretching) exercises is recommended for people with kidney disease. A target of 30 minutes each day, 5–7 days per week is recommended (3).

What is a typical exercise session?

Each session should include 5–10 minutes of warm-up exercises (light aerobic and stretching exercise) before the main exercise phase. The main phase should comprise aerobic exercise targeting large muscle groups, such as walking, jogging, cycling or swimming. Try exercising with a partner or in a group, so that you develop a support network. If you are a health care professional, remember to discuss with your patients the importance of warming up, cooling down and stretching. People with kidney disease probably have poor fitness when starting an exercise program, so the program should begin slowly and progress gradually, or be tailored to suit their starting fitness level.

How intense should the exercise be?

The aerobic exercise intensity should be classified by the person as 'somewhat hard'; that is, their breathing and heart rate should increase, making it difficult to talk continuously while exercising. People should try to exercise at the highest intensity tolerable for at least 10 minutes at a time (increasing the time as their fitness and confidence increase).

What type of resistance exercise should be done?

Resistance exercise should be done on alternate days or at least twice a week, starting each session at a lower intensity. The program should comprise 2–3 sets of 8–10 exercises at an intensity (weight) that can be maintained (lifted) for 12–15 repetitions. Resistance exercise should also include a combination of weight-bearing exercises, functional exercises and stair climbing.

What about exercise for people on dialysis?

It is possible to exercise during haemodialysis; for example, by cycling on a stationary bicycle (4). However, the dialysis unit may not have the space for the bicycle or the staff expertise to monitor the exercising patient closely. It may be more convenient for patients to exercise on nondialysis days. A patient may become hypotensive (low blood pressure) after haemodialysis and should avoid exercising directly afterward. Peritoneal dialysis patients may find it more comfortable to exercise when they are not dialysing. Because most patients on dialysis are on substantial fluid restriction and pass little urine, it is important to consult with the patient's nephrologist before changing the patient's fluid intake.

Related information and references

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

Kidney Health Australia www.kidney.org.au

1. Howden EJ et al. *Sports Medicine* 2011.
2. Segura-Orti E, Johansen KL. Exercise in end-stage renal disease. *Seminars in dialysis*;2010; 23: 422–30.
3. Kidney Health Australia. (2007). *Chronic kidney disease management in general practice*. Melbourne. Available at www.kidney.org.au/.
4. Johansen KL. Exercise and chronic kidney disease: current recommendations. *Sports Medicine*.2005; 35: 485–99.