

# Kidney Disease and Exercise in ABORIGINAL AND TORRES STRAIT ISLANDER POPULATIONS

## What is kidney disease?

The kidneys clean the blood and are the body's waste disposal system, producing urine. The kidneys also help control blood pressure and regulate the body's salt, potassium and acid content. A gradual loss of these functions is referred to as kidney disease.

## Risk factors for kidney disease

- High blood pressure
- Diabetes
- Inflammation of the blood vessels in the kidney
- Strength training can reduce muscle wasting and increase muscle strength. Additionally, strength training can increase one's ability to perform basic, day-to-day functional activities such as getting out of a chair, walking tolerance, walking speed, stair climbing, and mobility.
- Recently, the benefits of high intensity interval training (HIIT) have become more widely known. Well tolerated by many kidney disease patients, the incorporation of HIIT may be a more achievable way to engage in a level of physical activity that leads to improvements in health. This type of exercise training can be completed in less than 30 minutes.

## Benefits of exercise in kidney disease treatment

- Aerobic exercise, such as 10 minute bouts of walking, can assist with weight loss, decrease cardiovascular and kidney disease risk factors, improve kidney function and general fitness.

## Precautions in starting an exercise program for patients with kidney disease

- Patients should not start an exercise program if they have electrolyte abnormalities, in particular hypo/hyperkalemia (low or high potassium levels), pulmonary congestion (increased fluid in the lungs), and peripheral edema (increased fluid causing swelling in the limbs).
- Patients should not undertake HIIT if they have the following conditions: unstable angina pectoris, uncompensated heart failure, recent myocardial infarction, recent coronary artery bypass graft, percutaneous coronary intervention, heart disease that limits exercise (valvular, congenital, ischemic, hypertrophic cardiomyopathy), complex ventricular arrhythmias or heart block, severe chronic obstructive pulmonary disorder, cerebrovascular disease or uncontrolled peripheral vascular disease, uncontrolled diabetes mellitus, hypertensive patients with blood pressure >180/110, or severe neuropathy.
- It is recommended that kidney disease patients consult a general practitioner or an accredited exercise physiologist before starting a new exercise regimen.



# Kidney Disease and Exercise in ABORIGINAL AND TORRES STRAIT ISLANDER POPULATIONS

## What type of exercise is recommended?

TYPE OF EXERCISE	INTENSITY	DURATION	FREQUENCY
Aerobic	Moderate 'Talking intensity'	30-60 min per day Can be broken into shorter 5-10 minute sessions throughout the day	3-5 days per week
Resistance (strength)	70% of estimated 1 repetition maximum	Exercises for all major muscle groups at 8-10 repetitions making 1 set  Start with 1 set and gradually increase to 3 sets	3 sessions per week
High Intensity Interval Training (HIIT)	Warm up: 60% Peak HR Interval = 85-95% Peak HR Recovery = 70% Peak HR Cool Down: 50% Peak HR	Warm up: 10 mins  Interval = 4 x 4 minutes  Recover = 3 x 3 minutes	3 sessions per week

## Exercise for people on dialysis

With increasing availability and decreasing cost, ergometers such as portable arm ergometers (arm cranks) make exercising whilst on dialysis more practicable. Portable arm cranks can be used for both upper and lower body aerobic exercise. Further, ergometers allow patients to exercise for shorter intervals, helping to avoid fatigue.

If it is difficult for patients to perform exercise on non-dialysis days, exercising whilst on dialysis may increase the positive outcomes of an exercise intervention. Upper and lower limb strengthening exercises (e.g. resistance bands) can also be included into the during-dialysis exercise regimen.



## Recommendations for health professionals working with Aboriginal and Torres Strait Islander patients

- All non-indigenous health care providers should undertake cultural awareness training.
- Be prepared to re-schedule group or individual exercise sessions if family or community business is happening for the client and family.
- Where possible, perform group exercise sessions whilst patients are on dialysis.
- Gender specific exercise groups may have better uptake than mixed groups.
- Promote patient participation in group exercise sessions held in cooler times of the day. Examples include group walks or team based sports in your community.

## References and further information:

1. Statistics. ABo: Australian Aboriginal and Torres Strait Islander Health Survey: Biomedical Results, 2012-13. In. Report No: 4727.0.55.003, Canberra.; 2014.
2. Andrew P: Cost of best-practice primary care management of chronic disease in a remote Aboriginal community. 2014.
3. Beetham KS: Exercise and lifestyle intervention and high intensity interval training in patients with chronic kidney disease. 2015.
4. Watson EL, Greening NJ, Viana JL, Aulakh J, Bodicoat DH, Barratt J, Feehally J, Smith AC: Progressive resistance exercise training in CKD: a feasibility study. American Journal of Kidney Diseases 2015, 66(2):249-257.
5. Bae Y-H, Lee SM, Jo JI: Aerobic training during hemodialysis improves body composition, muscle function, physical performance, and quality of life in chronic kidney disease patients. Journal of physical therapy science 2015, 27(5):1445.
6. Morishita Y, Nagata D: Strategies to improve physical activity by exercise training in patients with chronic kidney disease. International journal of nephrology and renovascular disease 2015, 9:19.
7. Greenwood SA, Koufaki P, Mercer TH, MacLaughlin HL, Rush R, Lindup H, O'Connor E, Jones C, Hendry BM, Macdougall IC: Effect of Exercise Training on Estimated GFR, vascular health, and cardiorespiratory fitness in patients with CKD: a pilot randomized controlled trial. American Journal of Kidney Diseases 2015, 65(3):425-434.

Special thank you to the Aboriginal Health and Medical Research Council (AH&MRC) for assistance in the development of this document