

Dyslipidaemia and exercise

Dyslipidaemia refers to abnormal levels of blood fats (lipids) or 'lipoproteins', the carriers that move fat around the body. The most common dyslipidaemias are high blood cholesterol and triglyceride levels (hyperlipidaemia), high levels of low-density lipoprotein cholesterol (LDL-c, the 'bad' cholesterol) and low levels of high-density lipoprotein cholesterol (HDL-c, the 'good' cholesterol). Management of dyslipidaemia is important for people with, or at risk of, cardiovascular disease.

How does exercise help?

Management of cardiovascular risk should centre on lifestyle changes, including taking regular exercise, improving the diet and, ideally reducing weight especially body fat. All people, including those at high risk, should aim for these changes (1, 2). Exercise is a low-cost, readily available treatment with proven benefits for lipid and lipoprotein levels (4, 5). In addition, regular exercise and physical fitness lower the risk of heart disease associated with being overweight or obese, or having high blood pressure (6, 7). Physical fitness and regular exercise considerably reduce the absolute cardiovascular risk and death rate (8, 9). Studies also show that weight loss is best achieved by combining an improved diet with regular exercise, rather than either of these measures alone (10). However, there is no clear evidence that exercise therapy without weight loss can improve LDL-c or total cholesterol levels.

What types and intensities of exercise are recommended?

People with dyslipidaemia should undertake aerobic exercise for at least 30 minutes on most, if not all, days of the week to improve their lipid profiles and reduce their cardiovascular risk. This amount can be accumulated in shorter bouts of 10 minutes duration. Aerobic exercises that use the large muscle groups are appropriate and effective, such as brisk walking, jogging, cycling, swimming, dancing, skiing, playing ball games or other sporting activities. Studies show that regular aerobic exercise can: (a) increase HDL-c by 3–10% (up to 0.16 mmol/L); and (b) reduce triglycerides by about 11% (up to 0.34 mmol/L) (4,5). Benefits may be greater than these figures with the current exercise recommendations. Vigorous aerobic exercise improves HDL-c more than less-intense exercise (4). A simple rule of thumb for moderate-intensity aerobic exercise is to exercise at a level that increases your breathing and heart rate but still allows you to maintain a conversation. More vigorous aerobic exercise is described as a 'very hard' effort.

Progressive high-intensity resistance training (weight training) alone improves HDL-c (11). Do 2–3 sets of 8–10 different exercises, at a load that can be performed for 8–15 repetitions of each exercise, at least twice a week. Warm up first with 5–10 minutes of light aerobic activities, and always use correct exercise technique to minimise the risk of injury. Strategies that improve adherence to programs should be adopted, including personalising goals to adopt regular exercise, self-monitoring, regular re-assessment and frequent contact with a healthcare professional (6, 7).

Self-directed vigorous aerobic or resistance training may not be appropriate for all people with dyslipidaemia.

People who should have their exercise programs structured and delivered by an accredited exercise physiologist, under the supervision of a medical practitioner include:

- people with known or suspected cardiovascular disease, metabolic syndrome or diabetes;
- people with a family history of heart attacks;
- people with high blood pressure;
- smokers;
- men aged over 45 years or women aged over 55 years; and
- people who have not been doing regular exercise.

Related information and references

Exercise is Medicine Australia www.exerciseismedicine.org.au

Find an Accredited Exercise Physiologist www.essa.org.au

Exercise Right www.exerciseright.com.au

1. Tonkin A, Barter P, Best J, et al. National Heart Foundation of Australia and the Cardiac Society of Australia and New Zealand: position statement on lipid management — 2005. *Heart Lung Circ* 2005; 14(4): 275–91.
2. National Heart Foundation of Australia and the Cardiac Society of Australia and New Zealand. Reducing risk in heart disease: an expert guide to clinical practice for secondary prevention of coronary heart disease. Melbourne: National Heart Foundation of Australia, 2012.
3. Carrington MJ and Stewart S. Australia's cholesterol crossroads: An analysis of 199,331 GP patient records. January 2011, Baker IDI Heart and Diabetes Institute, Melbourne, Australia
4. Kelley GA, Kelley KS, Franklin B. Aerobic exercise and lipids and lipoproteins in patients with cardiovascular disease: a meta-analysis of randomized controlled trials. *J Cardiopulm Rehabil* 2006; 26(3): 131–9.
5. Kelley GA, Kelley KS, Tran ZV. Aerobic exercise, lipids and lipoproteins in overweight and obese adults: a meta-analysis of randomized controlled trials. *Int J Obes* 2005; 29(8): 881–93.
6. Knowler WC, Barrett-Connor E, Fowler SE, et al. Reduction in the incidence of type 2 diabetes with lifestyle intervention or metformin. *N Engl J Med* 2002; 346(6): 393–403.
7. Laaksonen DE, Lindstrom J, Lakka TA, et al. Physical activity in the prevention of type 2 diabetes: the Finnish diabetes prevention study. *Diabetes* 2005; 54(1): 158–65.
8. Wei M, Kampert JB, Barlow CE, et al. Relationship between low cardiorespiratory fitness and mortality in normal-weight, overweight, and obese men. *JAMA* 1999; 282(16): 1547–53.
9. Sesso HD, Paffenbarger RS, Lee IM. Physical activity and coronary heart disease in men: The Harvard Alumni Health Study. *Circulation* 2000; 102(9): 975–80.
10. Franz MJ, VanWormer JJ, Crain AL, et al. Weight-loss outcomes: a systematic review and meta-analysis of weight-loss clinical trials with a minimum 1-year follow-up. *J Amer Diet Assoc* 2007; 107(10): 1755–67.
11. Braith RW, Stewart KJ. Resistance exercise training: its role in the prevention of cardiovascular disease. *Circulation* 2006; 113(22): 2642–50.

For more detailed information, please read the full version of this factsheet at www.exerciseismedicine.org.au

