HANDI Making non-drug interventions easier to find and use

Exercise based rehabilitation: heart failure

Intervention

Supervised (transitioning to unsupervised or group) exercise alone or as part of a cardiac rehabilitation (CR) program that includes psychosocial or educational interventions.

Indication

Evidence supports exercise training in people with heart failure as a means of reversing cardiac and skeletal muscle abnormalities, and improving functional status, quality of life and clinical outcomes.

People with heart failure experience marked reductions in their exercise capacity. This has detrimental effects on daily living activities and health-related quality of life (HRQoL), as well as hospital admission rate and mortality.

Exercise can reduce cardiovascular mortality, decrease risk heart failure-specific hospitalisation, and improve functional capacity and HRQoL for patients with clinically stable heart failure (i.e. left ventricular ejection fraction [LVEF] <40% and able to exercise).

Classification	Symptoms
Class I	No symptoms at rest, symptoms only at levels of exertion that would limit healthy individual
Class II	No symptoms at rest or mild exertion, symptoms on moderate exertion
Class III	No symptoms at rest, symptoms at mild exertion
Class IV	Symptoms at rest

Benefits appear to be independent of the type and dose of exercise CR.

Contraindications

According to the Exercise and Sport Science Australia Position Statement on exercise training and chronic heart failure, **absolute contraindications** are:

- progressive worsening of exercise tolerance or dyspnoea at rest or on exertion over previous 3–5 days
- significant ischaemia at low exercise intensities (<2 METS, or –50 W)
- uncontrolled diabetes
- acute systemic illness or fever
- recent embolism
- thrombophlebitis
- active pericarditis or myocarditis
- severe aortic stenosis
- regurgitant valvular heart disease requiring surgery
- myocardial infarction within previous 3 weeks
- new onset atrial fibrillation
- resting heart rate >120 bpm.

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Relative contraindications include:

- ≥2 kg increase in body mass over previous 1–3 days
- Concurrent continuous or intermittent dobutamine therapy
- Decrease in systolic blood pressure with exercise
- NYHA Class IV
- Complex ventricular arrhythmia at rest or appearing with exertion
- Supine resting heart rate ≥100 bpm
- Pre-existing comorbidities
- Moderate aortic stenosis
- BP > 180/110 mmHg (evaluated on a case by case basis).

Precautions

Exercise training is safe and effective for most patients with clinically stable heart failure. However, individuals should be stratified according to risk for a cardiac-related event during exercise training. Some patients may need intermittent or constant monitoring rather than transitioning to completely unsupervised exercise.

Adverse Effects

Patients participating in exercise CR programs have been shown to have fewer adverse events than those involved in usual care (without exercise).

Availability

Australian Cardiovascular Health and Rehabilitation Association (ACRA) provides state and territory program directories

www.acra.net.au
www.acra.net.au/cr-services/cr-directory

The Heart Foundation and ACRA affiliates have also developed 'maps' of the Cardiac Rehabilitation and Heart Failure Services Directory and made this information available on the Heart Foundation website by going to *Find your nearest cardiac rehabilitation service*.

heartfoundation.org.au/your-heart/living-with-heart-disease/cardiac-rehabilitation

Typically, cardiologists prescribe CR programs. However, some GPs are comfortable prescribing CR interventions and monitoring patient progress. The Heart Foundation has created a Physical activity in patients with cardiovascular disease: management algorithm and information for general practice

heartfoundation.org.au/images/uploads/publications/physical-activity-in-patients-with-cvd-management-algorithm.pdf

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Description

An exercise based CR program involves:

1. assessing the patient's baseline ability, limitations and cardiovascular risk
2. developing an exercise prescription (see below)
3. observing the patient's response to that prescription and adjusting the prescription as necessary
4. encouraging long-term participation in regular unsupervised exercise.

An appropriate exercise prescription, in parallel with a medication prescription, includes:

- type of activity (mode) and location (centre- or home-based)
- frequency (usually on a weekly basis)
- duration (how long for each session and for the program)
- intensity (dose)
- progression.

Type of activity (mode)

Low impact aerobic exercises such as walking, cycling, rowing and machine stair climbing (that use large muscle groups) are all effective. The mode(s) of exercise chosen should be enjoyable for the individual and simple to carry out to maximise adherence.

During the supervised training phase, a treadmill or stationary cycling may be used as the primary training mode.

Frequency and duration

A typical exercise prescription initially includes three supervised centre-based sessions per week (or a minimum of one per week with instructions for two equivalent home sessions). Over time, patients transition to home-based (or group) exercise on most days. This is necessary to achieve a significant improvement in functional capacity.

Each session includes three phases:

1. warm up (5–10 minutes)
2. training phase (20–45 minutes of continuous or discontinuous aerobic activity)
3. cool down (5–10 minutes).

Programs typically have patients attending at least one supervised session per week for 12 weeks before fully transitioning to home-based exercise patients after 12–36 supervised sessions.

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Intensity

Exercise intensity can be specified as a heart rate, a speed and grade of a treadmill/stationary cycle, or using the rating of perceived exertion (RPE or Borg scale), which most patients can learn and apply easily during unsupervised exercise.

www.heartonline.org.au/media/DRL/Rating_of_perceived_exertion_-_Borg_scale.pdf

The exercise intensity for healthy adults is usually a 12 to 13 (somewhat hard) on the RPE scale. This corresponds to 60–70% of functional capacity. Individuals with a low-baseline fitness level, which is often the case with cardiac patients, should begin at a lower percentage of capacity (e.g. equivalent to a rating of exertion of 10 on the Borg scale).

The incremental benefit of very high intensity exercise (>90% capacity) is small and is not recommended because it leads to lactate accumulation and fatigue, and increases the risk of physical injury and cardiovascular complications.

Progression

The exercise prescription is progressed according to patient tolerance, motivation and goals, symptoms, baseline fitness level and musculoskeletal limitations.

Tips and Challenges

While rest was traditionally recommended for patients with HF, it is now recognised that physical deconditioning plays a role in the progression of symptoms and poor outcomes.

Patients with HF often have limited exercise capacity because of dyspnoea, fatigue and comorbidities. When beginning exercise, patients may experience symptoms of exercise-induced dyspnoea, which can cause fear of being active and may be interpreted as worsening of their disease. Supervised training familiarises and reassures patients of the safety of exercise.

GPs may consider having a stationary exercise bike in the practice and supervise initial exercise sessions. A bike with a ‘watts’ reading is useful to set intensity targets. Where appropriate, patients may purchase or hire a stationary exercise bike and arrange a GP home visit.

For patients that cannot attend supervised training or afford to purchase equipment, activity can still generally be prescribed, such as walking 20–30 minutes daily at an intensity that feels moderate in effort. Periods of rest can be interspersed. Progression can occur by adding time to the initial 20 to 30 minutes or increasing the speed of walking. Options such as walking around a shopping centre may help patients who prefer a sheltered safe environment. Engaging family and carers can also help encourage adherence.

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Training

Australian Centre for Heart Health runs training courses for health professionals

www.australianhearthealth.org.au/training

Australian Cardiovascular Health and Rehabilitation Association (ACRA) core components of cardiovascular disease secondary prevention and cardiac rehabilitation 2014

www.acra.net.au/wp-content/uploads/2015/03/Woodruffe-et-al-2015-ACRA-core-components.pdf

Queensland Health. Outpatient cardiac rehabilitation: Best practice guidelines for health professionals

www.health.qld.gov.au/publications/best_practice/9115cardiac_doc.pdf

Heart Foundation. Cardiac rehabilitation

heartfoundation.org.au/for-professionals/clinical-information/cardiac-rehabilitation-for-health-professionals

Grading

NHMRC level I

References

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Sagar VA, Davies EJ, Briscoe S, et al. Exercise-based rehabilitation for heart failure: systematic review and meta-analysis. Open Heart 2015;2:e000163. DOI:10.1136/openhrt-2014-000163.

O'Connor CM, Whellan DJ, Lee KL, et al, HF-ACTION Investigators. Efficacy and safety of exercise training in patients with chronic heart failure: HF-ACTION randomized controlled trial. JAMA. 2009;301(14):1439–50. DOI: 10.1001/jama.2009.454.

Consumer resources

The Heart Foundation Recommended framework for cardiac rehabilitation

heartfoundation.org.au/images/uploads/publications/Recommended-framework.pdf

Video about the importance of cardiac rehabilitation

www.acra.net.au/the-importance-of-cardiac-rehabilitation

Sample patient exercise based cardiac rehabilitation information

www.ouh.nhs.uk/patient-guide/leaflets/files%5C091011cardiacrehableys.pdf

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