Physical activity in patients with cardiovascular disease: management algorithm and information for general practice

The National Heart Foundation of Australia recommends that people with well-compensated, clinically stable* cardiovascular disease (CVD‡) should aim, **over time**, to achieve 30 minutes or more of moderate-intensity† physical activity on most, if not all, days of the week for health benefits ('standard dose').[1] The target amount of activity can be accumulated in short bouts of 10 minutes or more. The patient's current level of activity, severity of CVD, comorbidities and personal preferences should determine the approach and rate of progress towards the goal.

For more detailed information, refer to the Heart Foundation's physical activity recommendations for people with CVD[1] (available at **www.heartfoundation.com.au**).

‡ CVD here refers to coronary heart disease (CHD), heart failure, peripheral vascular disease (PVD) and fully recovered stroke.

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Key points

- Survivors of recent cardiovascular events should be offered participation in supervised exercise rehabilitation, where available and practical.
- Unless contraindicated, people with well-compensated, clinically stable CVD should progress **over time** to the recommended physical activity dose. Those with advanced CVD or severely impaired functional capacity may have to aim for a lesser amount.
- People with well-compensated clinically stable CVD are likely to gain additional muscle fitness from light-to-moderate resistance activities.

All people with CVD can benefit from regular physical activity unless contraindicated. Regular physical activity using the large muscle groups (e.g. walking, cycling, swimming) is integral to treating CVD. It can improve symptoms, functional capacity, mental health and quality of life, and reduce cardiovascular risk by lowering blood pressure, reducing insulin resistance, managing unhealthy bodyweight, and improving lipid profiles. Light-to-moderate resistance activity, initiated under the supervision of a trained health professional, is safe and improves muscle fitness in patients with well-compensated, stable CVD.[1]

Regular moderate physical activity should be part of an overall approach to risk factor modification that incorporates smoking cessation, healthy eating, management of depression and social isolation, and treatment of biomedical risk factors such as dyslipidaemia, high blood pressure and diabetes.

Risks and precautions

The benefits of physical activity far outweigh the risks. The risk of a major cardiac event occurring among patients attending supervised cardiac rehabilitation programs is very low (estimated at 1 in 117,000 hours of participation; 1 in 750,000 hours for a fatal cardiac event).[2] Recurrent cardiac events are most likely in patients who are least physically active and performing above the recommended dose. The risk of injury and cardiovascular events can generally be minimised by increasing the dose of physical activity gradually over time.[1]

Any pre-activity evaluation for a progressive program of low- to moderate-intensity physical activity should include medications review, medical review, physical examination and a history of physical activity, to ensure there is no contraindication to becoming more active.[1] Physical activity should be tailored to the individual's comorbidities, diminished function associated with prolonged immobilisation, reduced muscle mass, poor balance or sensory deficits. Direct supervision with or without electrocardiographic monitoring of moderate intensity physical activity is not necessary for the majority of people with CVD.[1]

** Well-compensated, clinically stable: receiving appropriate pharmacotherapy, without evidence of new or progressive signs or symptoms indicative of clinical deterioration*

† Moderate-intensity physical activity: associated with a moderate, noticeable increase in depth and rate of breathing, while still allowing person to whistle or talk comfortably. Vigorous activity (associated with puffing and panting) is not routinely recommended for people with CVD.

This information and the management algorithm is consistent with, and can be used with, the Physical Activity Module brief intervention tool (available on practice management software programs Medical Director and MedTech32) and Lifescripts practice resources. For more information about Lifescripts visit www.adgp.com.au

Heart Foundation

Heart Foundation physical activity algorithm for people with stable CVD

The National Heart Foundation of Australia recommends that, **over time**, people with well-compensated clinically stable cardiovascular disease (CVD) should aim to include 30 minutes or more of moderate-intensity physical activity on most, if not all, days of the week for health benefits.

Case history review

Ask (yourself):
1. Is this CVD patient receiving appropriate pharmacotherapy?
2. Is this CVD patient free of any evidence of new or progressive signs or symptoms that could indicate clinical deterioration?

No (to either question)
Review management

Contraindications
- Unstable angina
- Symptoms (e.g. chest discomfort, shortness of breath) on low activity
- Uncontrolled cardiac failure
- Severe aortic stenosis
- Uncontrolled hypertension (e.g. systolic BP ≥ 180 mmHg and diastolic BP ≥ 110 mmHg)
- Acute infection or fever
- Resting tachycardia/arrhythmia
- Uncontrolled diabetes (e.g. blood glucose < 6 mmol/L or > 15 mmol/L)

Yes (to both questions)

Assess:
- Is the patient regularly active enough for health benefits?
- Use Physical activity assessment tool (e.g. Physical Activity Module on Medical Director/MedTech32/Lifescripts tools) (i.e. At least 150 minutes of moderate-intensity physical activity per week, accrued over at least 5 sessions of 10 minutes or more)

No

Is the patient intermittently active?

No

Is the patient interested in becoming more physically active?

No → **Pre-contemplation**
Help patient move towards possibility of changing behaviour

Advise:
- On risks of inactivity
- On benefits of activity

Assist:
- Offer educational material

Arrange:
- Review at next visit

Yes → **Contemplation**
Support patient in deciding to become more active

Advise:
- Discuss pros and cons of activity

Assist:
- Offer written script
- Suggest ways to be active during the day

Arrange:
- Consider referral to local physical activity provider
- Consider referral to tertiary services (e.g. exercise practitioner) for those who would benefit from supervision or request group support
- Organise follow-up and review

Yes

How long has the patient been doing enough regular physical activity for health benefits?

Yes → **Preparation**
Support patient to become regularly active

Advise:
- Discuss activity options

Assist:
- Assist person to develop action plan, set start date etc
- Help set realistic goals
- Provide script

< 6 months → **Action**
Support patient to continue regular activity

Advise:
- Reinforce health benefits

Assist:
- Give positive feedback
- Renew script as person progresses

Arrange:
- Set follow-up date

≥ 6 months → **Maintenance**
Support patient to continue regular activity

Advise:
- Advise person to maintain current level
- Reinforce benefits of activity

Use motivational interviewing techniques to build partnerships and set the agenda for change

Precautions
All patients should be provided with clear advice on risks and benefits of physical activity, warm-up and cool-down, limiting physical activity to low–moderate intensity, appropriate footwear and clothing, and the importance of following their symptom (chest pain/diabetes) management plans.

Indications to stop physical activity‡:
Squeezing, discomfort or typical pain in the centre of the chest or behind the breastbone ± spreading to the shoulders, neck, jaw and/or arms

Dizziness, light headedness or feeling faint; difficulty breathing; nausea; uncharacteristic excessive sweating; palpitations associated with feeling unwell; undue fatigue

Shakiness, tingling lips, hunger, weakness or palpitations in people with diabetes

‡ Patients should stop the activity and follow their chest pain/discomfort or diabetes management plan, and stop until reviewed.

January 2006

All people with coronary heart disease or diabetes should be given a written action plan to follow if symptoms occur during physical activity.[5]

Post acute coronary syndrome

- Patients with clinically stable CVD after recent acute myocardial infarction (AMI), unstable angina, coronary artery bypass grafting or percutaneous coronary intervention, should be offered participation in a supervised exercise rehabilitation program for up to 12 weeks.[1,3]
- Regular physical activity after an acute coronary syndrome (ACS)‡ event with or without coronary revascularisation improves functional capacity and lowers the risk of future cardiovascular events.[1]

Coronary heart disease

- Patients with well compensated, clinically stable CHD may begin increasing physical activity by following the program for AMI survivors (Table 1). The program can be accelerated in those who were previously active.[1]

Advanced CHD

- Those with advanced CHD should begin with multiple short (2–10 minutes) sessions of light activity (e.g. stroll on flat ground), interspersed with frequent rest periods, on alternate days. The initial goal should be to increase duration and frequency (sessions per day and number of days per week) gradually as tolerated, aiming for 30 minutes per day on most days. Intensity may then be increased to moderate.[1]

Heart failure

- Regular physical activity improves symptoms and increases functional capacity in patients with heart failure, and has been reported to improve survival. Current evidence suggests that physical activity conditioning, including resistance training, is safe for people with well-compensated, clinically stable heart failure.[1]
- Patients with well-compensated, clinically stable heart failure should progress **over time** to achieve 30 minutes of moderate-intensity physical activity on most days.[1]
- Those with New York Heart Association (NYHA) Functional Class III or IV heart failure should attempt shorter intervals of physical activity interspersed with more rest days.[1]
- For those with symptomatic heart failure, physical activity should be initiated under supervision. A reduction, including brief abstinence, in the dose of physical activity may be necessary in response to clinical deterioration.[1]

Implanted cardiac devices

- Clinically stable patients with implanted cardiac devices and those with congenital heart disease or valvular disease should aim for the standard recommended dose of physical activity, with dose reductions for individuals as required.[1]

Elderly patients with CVD

- Regular low- to moderate-intensity physical activity appears to be safe for older people with heart disease.[1]
- When advising older patients with CVD about increasing physical activity, the emphasis should be on short daily bouts of low- to moderate-intensity activity. The target dose can be reduced, and patients with comorbidities may progress slowly to achieve interim targets. Initially, the emphasis should be on frequency (through the day and number of days), followed by increasing duration.

Cerebrovascular disease and PVD

- Regular moderate physical activity is integral to treating stroke, diabetes and PVD.[1]
- Progressive physical activity is an effective treatment for improving walking distance in patients with claudication.[6]
- Patients who have survived a stroke and retain sufficient functional capacity should be advised to aim **over time** to achieve the standard dose of physical activity. The activity may need to be tailored to the patient's comorbidities and any residual neurological deficits.[1]

Diabetes

- Patients with type 1 or 2 diabetes who have achieved good glycaemic control, and have no complications, can benefit from the standard dose of physical activity.[1]
- The presence of macro- and microvascular complications may necessitate a dose reduction to prevent further complications.[1]
- All patients with diabetes should be given a written action plan to use if symptoms occur during physical activity.[1]

Table 1. A typical walking program for patients with CVD, including AMI survivors, involves:[1,4]

Week	Minimum time (minutes)	Times per day	Pace
1	5–10	2	Stroll
2	10–15	2	Comfortable
3	15–20	2	Comfortable
4	20–25	1–2	Comfortable/stride out
5	25–30	1–2	Comfortable/stride out
6	30	1–2	Comfortable/stride out

‡. Including the ACS spectrum from ST elevation AMI, non-ST elevation AMI, to an accelerated pattern of angina without evidence of infarct

References:

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PP-580 ABN 98 008 419 761