



KNGF Guideline on Cardiac Rehabilitation

SUMMARY

This is an overview of the most important recommendations in the KNGF/VvOCM Guideline on Cardiac Rehabilitation (KNGF, 2023). The complete guideline can be found on the [KNGF knowledge platform](#).

• Diagnostic process

Personalised care	<p>Make personalised care part of the exercise programme of cardiac rehabilitation phase II for patients with coronary artery disease or chronic heart failure to facilitate starting, completion and continuation.</p> <p>Take the following into consideration here:</p> <ul style="list-style-type: none">• The indication (including an intake interview, screening and identifying goals for the cardiac rehabilitation) and formulation of the physical and exercise therapy treatment plan are established and started up by a multidisciplinary cardiac rehabilitation team in a cardiac rehabilitation centre/hospital in a secondary or tertiary care setting.• When drawing up the treatment plan, the following principles apply:<ul style="list-style-type: none">- the healthcare needs, individual characteristics, capabilities, wishes, needs, learning strategy and context of the patient;- (relative) contraindications and comorbidities of the patient;- the complexity of the disease profile;- the cardiac rehabilitation goals that were chosen by the multidisciplinary cardiac rehabilitation team together with the patient.• The indication and formulation of the treatment plan take place upon referral and under the ultimate responsibility of the cardiologist.• Throughout the cardiac rehabilitation programme, the therapist will assess together with the patient whether the implemented exercise programme is still sufficiently suited to the patient. Consult with the multidisciplinary cardiac rehabilitation team about whether it is necessary to adapt the cardiac rehabilitation programme.
	<p>Actively involve the patient with coronary artery disease or chronic heart failure in any decision-making regarding their diagnosis, treatment, accompaniment and after-care in order to choose the most suitable treatment during the exercise programme of cardiac rehabilitation phase II, and consider using the i3s model in this regard.</p>
Patients with a low socio-economic status (SES) and/or limited health literacy	<p>For all patients with coronary artery disease or chronic heart failure, but in particular those with a low socio-economic status (SES) and/or limited health literacy, apply the following advice to facilitate compliance and the completion of the exercise programme in phase II of cardiac rehabilitation.</p> <ul style="list-style-type: none">• Communicate with clarity;• Support the person's belief in their own abilities;• Enquire about practical, social and/or economic barriers;• Try to form an idea of the person's health, language and digital literacy;• Be aware of your own therapeutic attitude;• Consult with the entire cardiac rehabilitation team.
Measurement instruments	<p>Use the Patient-Specific 'Goal-setting' method (PSG) with all patients to diagnose, monitor and evaluate the therapeutic treatment, unless there is a patient-specific reason not to do so.</p>

• Therapeutic process

Continuation of and completion of cardiac rehabilitation	<p>The exercise programme in phase II of cardiac rehabilitation for patients with coronary artery disease or chronic heart failure must be adapted to the patient. To do so, take the essential components mentioned in 'Personalised care' into account. Consider in this regard to:</p> <ul style="list-style-type: none"> • get in touch with the patient at an early stage (upon release from hospital or referral/ registration) to make an inventory of their needs, beliefs and expectations (regarding support and information); • identify inhibiting factors at an early stage; • offer the exercise programme in phase II of cardiac rehabilitation at different times; • propose different forms and types of exercise (adapted to the patient's daily activities) in the exercise programme of phase II of cardiac rehabilitation; • offer a hybrid form of the exercise programme in phase II of cardiac rehabilitation, such as: <ul style="list-style-type: none"> - telerehabilitation; - the exercise programme in a primary care setting; - at home without supervision/accompaniment during exercises (home-based cardiac rehabilitation).
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FITT factors	<p>Adjust the frequency, intensity, type and time (FITT factors) of training for a patient with chronic heart failure (with either reduced ejection fraction (HFrEF) or preserved ejection fraction (HFpEF)) aimed at optimising exercise capacity to each individual.</p> <p>To do so, take the essential components mentioned in 'Personalised care' into account. Consider in this regard:</p> <ul style="list-style-type: none"> • introducing aerobic training in particular (continuous training and interval training) to optimise exercise capacity; • introducing 'high-intensity interval training' (HIIT) instead of continuous training; • increasing the total energy consumption of the aerobic training (a product of session frequency, session time, training intensity and duration of the programme) to optimise exercise capacity, keeping in mind that all training variables are inextricably linked to each other; • combining training with other forms of exercise, such as: <ul style="list-style-type: none"> - strength training for patients who due to limited muscle strength cannot keep up aerobic training; - 'inspiratory muscle training' (IMT) for patients with reduced inspiratory breathing muscle strength ($Pi\text{-max} \leq 70\%$ of what is predicted) or a ventilatory limitation in addition to aerobic training; • applying FITT factors to patients with HFrEF or HFpEF in line with the target values in the following table:
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FITT factors for optimising exercise capacity in patients with chronic heart failure and with HFrEF or HFpEF

Training modality	Scope and frequency	Intensity and duration
aerobic training (CT, HIIT or LIT)	0-12 weeks: CT, HIIT or LIT: 3-5x/week	CT: 50-80% peak VO_2 /HRR, 20-60 min. HIIT: 80-90% peak VO_2 /HRR, active recuperation 40-60% of peak VO_2 /HRR, interval 4x4 min., active recuperation 3x3 min. LIT: 50% wattage, 10-12 interval 30 sec, recuperation 60 sec
strength training (ST)	0-12 weeks: KT: 2-3x/week	KT: 30-80% 1RM, 8-10 exercises of large muscle groups, 2-3 sets of 10-15 repetitions, 1-2 min. rest (starting after 6-8* weeks)
'inspiratory muscle training' (IMT)	0-12 weeks: IMT: 3-4x/week	IMT: 20-40% of $Pi\text{-max}$, 2x15 min./day

CT = continuous training; HIIT = high-intensity interval training; LIT = low-intensity (interval) training; HRR = heart rate reserve; min. = minute; $Pi\text{-max}$; MIP = maximum inspiratory mouth pressure; RM = repetitions maximum; peak VO_2 = peak oxygen intake
* in consultation with the cardiologist, training can also start earlier (Ennis 2022)





The exercise programme in a primary care setting

For patients with coronary artery disease or chronic heart failure, consider introducing an exercise programme in a primary care setting practice in phase II of the cardiac rehabilitation programme to facilitate continuation and completion of the cardiac rehabilitation programme, but:

- to do so, take the essential components mentioned in 'Personalised care' into account, and
- consider this only if the conditions are met that were defined in terms of quality, safety and facilities as are formulated hereafter.

Ensure that:

- an AED is within reach at the place where the exercise programme is conducted;
- during the execution of the exercise programme at least two team members are present on site who are competent and qualified to provide 'basic life support' (BLS) and use an automatic external defibrillator (AED);
- at least one therapist is present during the execution of the exercise programme who is competent and qualified to signal signs of over exertion and/or (life-)threatening situations in the event of coronary artery disease or chronic heart failure;
- there is proper communication between the secondary/tertiary care setting and the primary care setting therapist (such as an opportunity for (structural) consultation between the primary care setting therapist and the referring cardiologist);
- there has been a proper multidisciplinary transfer of information from the cardiac rehabilitation in a secondary and tertiary care setting to the therapist in primary care setting;
- after completion of the exercise programme in phase II of cardiac rehabilitation, an end report is made (for the general practitioner and the cardiologist);
- the practice includes a disaster plan that is regularly updated and that is known to all the team members involved.

Telerehabilitation

Consider introducing telerehabilitation (as a replacement for or supplement to regular cardiac rehabilitation) in the exercise programme in phase II of cardiac rehabilitation for patients with coronary artery disease or chronic heart failure to improve physical functioning and quality of life. To do so, take the essential components mentioned for 'Personalised care' into account.