

Recommendations for exercise testing, prescription, and monitoring in outpatient cardiac rehabilitation programs for independent UK and Ireland regions and Europe, including leading cardiac rehabilitation organisations (ACSM).

Country	Type of exercise	Intensity of exercise	Duration and frequency of sessions	Program length	Exercise testing and monitoring	Expectations for additional activity
Leading cardiology and cardiac rehabilitation organisations						
ACSM (2022)	<p>Aerobic endurance training</p> <p>Arm ergometer, combination of upper and lower (dual action) extremity cycle ergometer, upright and recumbent cycle ergometer, recumbent stepper, rower, elliptical, stair climber, treadmill.</p> <p>Resistance training</p> <ul style="list-style-type: none"> 1–3 sets; 8–10 different exercises focused on major muscle groups 	<ul style="list-style-type: none"> With an exercise test, use 40%–80% of exercise capacity using HRR, $\dot{V}O_{2R}$, or $\dot{V}O_{2peak}$. Without an exercise test, use seated or standing resting heart rate (HR_{rest}) +20 to +30 beats \cdot min⁻¹ or an RPE of 12–16 on a scale of 6–20 Perform 10–15 repetitions of each exercise without significant fatigue; RPE 11–13 on a 6–20 scale or 40%–60% of 1-RM. 	<ul style="list-style-type: none"> 20-60 minutes Minimally 3 d \cdot wk⁻¹ preferably up to 5 d \cdot wk⁻¹ 2–3 non-consecutive d \cdot wk⁻¹ 	NA	NA	NA

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	<p>Flexibility training</p> <ul style="list-style-type: none"> • Static and dynamic stretching focused on the major joints of the limbs and the lower back • Consider PNF technique. 	<ul style="list-style-type: none"> • To the point of feeling • tightness or discomfort. 	<ul style="list-style-type: none"> • 10–30 s hold for static stretching; ≥4 repetitions of each exercise. • ≥2–3 d · wk⁻¹ with daily being most effective. 			
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<p>European</p> <p>European Association of Cardiovascular Prevention and Rehabilitation</p>	<p>Aerobic endurance training</p> <p>walking, jogging, cycling, swimming, rowing, stair climbing, elliptical trainer, aerobics</p>	<ul style="list-style-type: none"> • 50–80% VO_{2max} (close to anaerobic threshold) • 50–80% HR_{peak} or 40–60% HRR • RPE 10–14 	<ul style="list-style-type: none"> • 20–30 minutes per Session • 3 sessions per week (Preferably 6–7) 	<ul style="list-style-type: none"> • 2–16 weeks 	<p>Exercise testing</p> <ul style="list-style-type: none"> • Symptom-limited exercise test <p>Monitoring</p> <ul style="list-style-type: none"> • Observation of symptoms • HR monitoring • BP monitoring • ECG monitoring during initial stages or for patients with new symptoms 	<ul style="list-style-type: none"> • Equivalent of 30 minutes of moderate intensity walking per day
<p>England</p> <p>Department of Health, National Institute for Health and Care Excellence, National Health Service</p>	<p>Not specified</p>	<p>Moderate intensity</p>	<ul style="list-style-type: none"> • For sufficient time to result in a safe and appropriate physiological challenge within the session • At least 2 sessions per week 	<ul style="list-style-type: none"> • 6–12 weeks 	<p>Exercise testing</p> <ul style="list-style-type: none"> • Functional capacity testing (ergometer test or walking/step tests) <p>Monitoring</p> <ul style="list-style-type: none"> • HR monitoring • BP monitoring • RPE • Rate-pressure product 	<ul style="list-style-type: none"> • 30 minutes of exercise on 5 days of the week
<p>Ireland</p> <p>Irish Association of Cardiac Rehabilitation)</p>	<ul style="list-style-type: none"> • Aerobic endurance training 	<ul style="list-style-type: none"> • 40–80% VO_{2peak} • 50–85% HR_{max} • 40–70% HRR • RPE 13–16 	<ul style="list-style-type: none"> • 30 minutes per session • 2 sessions per week 	<ul style="list-style-type: none"> • >6 weeks 	<p>Exercise testing</p> <ul style="list-style-type: none"> • Functional capacity testing using Bruce protocol, 6-minute walk test, shuttle walk test or Chester step test 	<ul style="list-style-type: none"> • Not specified

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					<p>Monitoring</p> <ul style="list-style-type: none"> • ECG (progress from continuous monitoring to intermittent as appropriate for risk level of patient) 	
<p>Northern Ireland Clinical Resource Efficiency Support Team)</p>	<p>Aerobic endurance Training e.g., cycling, walking</p> <p>Resistance training</p>	<ul style="list-style-type: none"> • Low to moderate Intensity • Not specified 	<ul style="list-style-type: none"> • 20–30 minutes per session • 2 sessions per week • Not specified 	>8 weeks	<p>Exercise testing</p> <ul style="list-style-type: none"> • Functional exercise capacity test (e.g., shuttle walk test) • Exercise stress test with ECG recommended for high-risk patients or high-intensity exercise programmes <p>Monitoring</p> <ul style="list-style-type: none"> • HR monitoring • RPE 	<ul style="list-style-type: none"> • Additional home exercise programme

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<p>Scotland</p> <p>Scottish Intercollegiate Guidelines Network)</p>	<p>Aerobic endurance Training</p> <p>Resistance training</p>	<p>Low to moderate Intensity</p> <p>Not specified</p>	<ul style="list-style-type: none"> • Long-duration sessions • 2 sessions per week • Single set of 10–15 reps per exercise • 2–3 sessions per week 	<p>>8 weeks</p>	<p>Exercise testing</p> <ul style="list-style-type: none"> • Functional exercise capacity test (shuttle walk test or 6–minute walk test) • Maximal exercise test with exercise ECG only recommended for high-risk patients or high intensity activity <p>Monitoring</p> <ul style="list-style-type: none"> • HR monitoring • RPE 	<p>Not specified</p>
<p>Wales*</p> <p>Welsh Assembly Government, Aneurin Bevan Health Board</p>	<p>Not specified</p>	<p>Not specified</p>	<p>Session duration not specified</p> <p>2 sessions per week</p>	<p>>8 weeks</p>	<p>Exercise testing</p> <ul style="list-style-type: none"> • Functional capacity test (6–minute walk test/shuttle walk test/Chester step test/ergometer test) <p>Exercise tolerance test</p> <ul style="list-style-type: none"> • Monitoring • Not specified 	<p>Not specified</p>
<p>United Kingdom</p> <p>Association of Chartered Physiotherapists in</p>	<p>Aerobic endurance training</p>	<ul style="list-style-type: none"> • Moderate intensity 40–70% HRR • RPE 11–14 	<ul style="list-style-type: none"> • 20–60 minutes per session • 2–3 sessions per week 	<ul style="list-style-type: none"> • 4–24 weeks (Depending on the status of the patient) 	<p>Exercise testing</p> <ul style="list-style-type: none"> • Functional capacity test (6–minute walk test/shuttle walk 	<ul style="list-style-type: none"> • Not specified

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<p>Cardiac Rehabilitation, British Association for Cardiovascular Prevention and Rehabilitation)</p>	<p>Resistance training</p> <p>Flexibility training (Static, ballistic or PNF stretches)</p>	<ul style="list-style-type: none"> • 30–40% 1RM for upper body • 50–60% 1RM for lower body • Progress to 50–80% 1RM for both • To point of tightness 	<ul style="list-style-type: none"> • 2–4 sets of 8–12 reps for 8–10 muscle groups • 2–4 sessions per week • 2–4 reps, accumulating 60 seconds per stretch • 2–3 sessions per week 		<p>test/Chester step test or submaximal or symptom-limited ergometer test – no ECG monitoring)</p> <p>Monitoring</p> <ul style="list-style-type: none"> • Observation of symptoms • HR monitoring • BP monitoring • RPE • Oxygen saturation by pulse oximetry if indicated by condition 	
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Abbreviations: NA: Not applicable; VO₂max: maximal oxygen uptake; HR_{peak}: peak heart rate; HRR: heart rate reserve; RPE: rating of perceived exertion (based on Borg 6–20 scale); reps: repetitions; HR: heart rate; BP: blood pressure; ECG: electrocardiograph; 1RM: one-repetition maximum; VO₂peak: peak oxygen uptake; HR_{max}: maximum heart rate; MVC: maximum voluntary contraction; PNF: proprioceptive neuromuscular facilitation.

* The policy document for cardiac rehabilitation in Wales contains limited exercise prescription recommendations and does not refer to other guidelines for this information.

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