Supplementary Material

S1: PRISMA 2020 checklist

Section and topic	Item #	Location where item is reported
Title	1	Title
Abstract	2	Abstract
Rationale	3	Introduction
Objectives	4	Introduction
Eligibility criteria	5	Methods – selection criteria
Information sources	6	Methods – sources and search strategy
Search strategy	7	Supplementary Material S2
Selection process	8	Methods – selection process
Data collection process	9	Methods – data extraction
Data items	10	Methods – data extraction
Study risk of bias assessment	11	Methods – quality assessment
Effect measures	12	Methods – data analysis
Synthesis methods	13	Methods – data analysis
Reporting bias assessment	14	Methods – data analysis
Certainty assessment	15	Methods – quality assessment
Study selection	16	Results
Study characteristics	17	Results – study characteristics
Risk of bias in studies	18	Results – quality assessment
Results of individual studies	19	Results and Supplementary Material S8 – S10
Results of syntheses	20	Results
Reporting biases	21	Not applicable (less than ten studies were included in the meta-analysis)
Certainty of evidence	22	Results – quality assessment
Discussion	23a-d	Discussion
Registration and protocol	24	Methods
Support	25	End of manuscript
Competing interests	26	End of manuscript
Availability of data, code, and other materials	27	End of manuscript

S2: Search Strategies

PubMed

("Cardiac Rehabilitation"[Mesh] OR "Heart Diseases/rehabilitation"[Mesh] OR “cardiac rehabilit*”[tiab] OR “cardiac telerehabilit*”[tiab] OR “cardiac tele-rehabilit*”[tiab] OR “cardiovascular rehabilit*”[tiab] OR “heart rehabilit*”[tiab] OR “coronary rehabilit*”[tiab] OR “infarct rehabilit*”[tiab] OR “infarction rehabilitation”[tiab] OR
(("Cardiovascular Diseases"[Mesh:NoExp] OR "Heart Diseases"[Mesh:NoExp] OR "Myocardial Ischemia"[Mesh] OR "Coronary Artery Bypass"[Mesh] OR "Heart Failure"[Mesh] OR “heart diseas*”[tiab] OR “heart failure”[tiab] OR “heart surg*”[tiab] OR “myocardial infarction*”[tiab] OR “coronary bypass”[tiab] OR “coronary artery diseas*”[tiab] OR “coronary diseas*”[tiab] OR “coronary syndrome”[tiab] OR “heart valve repair”[tiab] OR “heart valve replacement*”[tiab] OR “heart valve surger*”[tiab] OR angina[tiab] OR “cardiac defibrillat*”[tiab] OR heart[ti] OR cardiac[ti] OR myocard*[ti] OR coronary[ti])
AND
("Rehabilitation"[Mesh:NoExp] OR "Telerehabilitation"[Mesh] OR "Exercise Therapy"[Mesh] OR “exercise therap*”[tiab] OR “exercise intervention*”[tiab] OR “exercise training”[tiab] OR “exercise program*”[tiab] OR “exercise based”[tiab] OR “physical exercise”[tiab] OR “physical training”[tiab] OR rehabilitat*[tiab] OR telerehab*[tiab] OR discharg*[tiab] OR postdischarg*[tiab] OR recover*[tiab] OR following[ti] OR "Heart Failure"[Majr] OR “heart failure”[ti])
AND
("Telerehabilitation"[Mesh] OR "Telemedicine"[Mesh] OR "Remote Sensing Technology"[Mesh] OR "Internet"[Mesh] *OR "Home Care Services"[Mesh]* OR telerehabilit*[tiab] OR erehabilit*[tiab] OR “tele-rehabilit*”[tiab] OR “e-rehabilit*”[tiab] OR telemonitor*[tiab] OR “tele-monitor*”[tiab] OR telehealth[tiab] OR “tele-health”[tiab] OR telenursing[tiab] OR “tele-nursing”[tiab] OR home[tiab] OR homebased[tiab] OR virtual*[tiab] OR remote*[tiab] OR digital[tiab] OR distan*[tiab] OR ehealth[tiab] OR mhealth[tiab] OR “e-health”[tiab] OR “m-health”[tiab] OR webbased[tiab] OR web-based[tiab] OR online-based[tiab] OR internet-based[tiab] OR smartphone-based[tiab] OR hybrid[tiab] OR tele*[ti])))
AND
("Economics"[Mesh:NoExp] OR "Costs and Cost Analysis"[Mesh] OR "Quality-Adjusted Life Years"[Mesh] OR "economics" [sh] OR cost[tiab] OR costs[tiab] OR costly[tiab] OR econom*[tiab] OR (value[tiab] *AND* money[tiab]) OR qaly*[tiab] OR “quality adjusted life year*”[tiab])
AND
("Clinical Trial" [pt] OR "Clinical Trials as Topic"[Mesh] OR random*[tiab] OR trial*[tiab])

Embase

('heart rehabilitation'/exp OR 'heart disease'/exp/dm_rh OR ((cardiac OR heart OR infarct* OR coronary) NEXT/2 (rehabilit* OR telerehabilit*)):ab,ti,kw OR
(('cardiovascular disease'/mj OR 'heart disease'/mj OR 'heart failure'/exp/mj OR 'myocardial disease'/exp/mj OR 'valvular heart disease'/exp/mj OR 'ischemic heart disease'/exp/mj OR 'heart surgery'/exp/mj OR (‘heart diseas*’ OR ‘heart failure’ OR ‘heart surg*’ OR ‘myocardial infarction*’ OR ‘coronary bypass’ OR ‘coronary artery diseas*’ OR ‘coronary diseas*’ OR ‘coronary syndrome’ OR ‘heart valve repair’ OR ‘heart valve replacement*’ OR ‘heart valve surger*’ OR angina OR ‘cardiac defibrillat*’):ab,ti,kw OR (heart OR cardiac OR myocard* OR coronary):ti)
AND
('rehabilitation'/de OR 'home rehabilitation'/exp OR 'telerehabilitation'/exp OR 'kinesiotherapy'/mj OR 'exercise'/mj OR 'aerobic exercise'/exp OR 'exercise test'/exp/mj OR (‘exercise therap*’ OR ‘exercise intervention*’ OR ‘exercise training’ OR ‘exercise program*’ OR ‘exercise based’ OR ‘physical exercise’ OR ‘physical training’ OR rehabilitat* OR telerehab* OR discharg* OR postdischarg* OR recover*):ab,ti,kw OR 'heart failure'/mj OR 'congestive heart failure'/mj OR (following OR ‘heart failure’):ti)
AND
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AND
('economics'/mj OR 'economic evaluation'/exp OR 'health care cost'/de OR 'cost'/de OR 'economic aspect'/de OR 'quality adjusted life year'/exp OR (cost OR costs OR costly OR econom* OR (value NEXT/5 money) OR qaly* OR ‘quality adjusted life year*’):ab,ti,kw)
AND
('clinical trial'/de OR 'controlled clinical trial'/exp OR (random* OR trial):ab,ti,kw OR trial*:ti)
NOT
('conference abstract'/it)

Cochrane CENTRAL

([mh "Cardiac Rehabilitation"] OR (("cardiac" OR heart OR coronary OR infarct* OR cardiovasc*) NEXT (rehabilit* OR telerehabilit* OR "tele-rehabilit*")):ti,ab OR

[mh ^"Cardiovascular Diseases"] OR [mh ^"Heart Diseases"] OR [mh "Myocardial Ischemia"] OR [mh "Coronary Artery Bypass"] OR [mh "Heart Failure"] OR ("heart" NEXT diseas*):ti,ab OR "heart failure":ti,ab OR ("heart" NEXT surg*):ti,ab OR ("myocardial" NEXT infarction*):ti,ab OR "coronary bypass":ti,ab OR ("coronary artery" NEXT diseas*):ti,ab OR ("coronary" NEXT diseas*):ti,ab OR "coronary syndrome":ti,ab OR "heart valve repair":ti,ab OR ("heart valve" NEXT replacement*):ti,ab OR ("heart valve" NEXT surger*):ti,ab OR angina:ti,ab OR ("cardiac" NEXT defibrillat*):ti,ab OR heart:ti OR cardiac:ti OR myocard*:ti OR coronary:ti)
AND
([mh ^Rehabilitation] OR [mh Telerehabilitation] OR [mh "Exercise Therapy"] OR ("exercise" NEXT therap*):ti,ab OR ("exercise" NEXT intervention*):ti,ab OR "exercise training":ti,ab OR ("exercise" NEXT program*):ti,ab OR "exercise based":ti,ab OR "physical exercise":ti,ab OR "physical training":ti,ab OR rehabilitat*:ti,ab OR telerehab*:ti,ab OR discharg*:ti,ab OR postdischarg*:ti,ab OR recover*:ti,ab OR following:ti OR [mh "Heart Failure"] OR "heart failure":ti)
AND
([mh Telerehabilitation] OR [mh Telemedicine] OR [mh "Remote Sensing Technology"] OR [mh Internet] OR telerehabilit*:ti,ab OR erehabilit*:ti,ab OR tele-rehabilit*:ti,ab OR e-rehabilit*:ti,ab OR telemonitor*:ti,ab OR tele-monitor*:ti,ab OR telehealth:ti,ab OR tele-health:ti,ab OR telenursing:ti,ab OR tele-nursing:ti,ab OR home:ti,ab OR homebased:ti,ab OR virtual*:ti,ab OR remote*:ti,ab OR digital:ti,ab OR distan*:ti,ab OR ehealth:ti,ab OR mhealth:ti,ab OR e-health:ti,ab OR m-health:ti,ab OR webbased:ti,ab OR web-based:ti,ab OR online-based:ti,ab OR internet-based:ti,ab OR smartphone-based:ti,ab OR hybrid:ti,ab OR tele*:ti)
([mh ^Economics] OR [mh "Costs and Cost Analysis"] OR [mh "Quality-Adjusted Life Years"] OR cost:ti,ab OR costs:ti,ab OR costly:ti,ab OR econom*:ti,ab OR (value:ti,ab AND money:ti,ab) OR qaly*:ti,ab OR ("quality adjusted life" NEXT year*):ti,ab)

CINAHL (EBSCO)
(MH "Rehabilitation, Cardiac" OR MH "Heart Diseases+/RH" OR TI ((cardiac OR heart OR infarct* OR coronary) N2 (rehabilit* OR telerehabilit*)) OR AB ((cardiac OR heart OR infarct* OR coronary) N2 (rehabilit* OR telerehabilit*))
OR
((MH "Heart Diseases" OR MH "Myocardial Ischemia+" OR MH "Coronary Disease+" OR MH "Myocardial Diseases+" OR MH "Heart Valve Diseases+" OR MH "Heart Failure+" OR MH "Myocardial Infarction+" OR TI=("heart diseas*" OR "heart failure" OR "heart surg*" OR "myocardial infarction*" OR "coronary bypass" OR "coronary artery diseas*" OR "coronary diseas*" OR "coronary syndrome" OR "heart valve repair" OR "heart valve replacement*" OR "heart valve surger*" OR angina OR "cardiac defibrillat*" OR heart OR cardiac OR myocard* OR coronary) OR AB=("heart diseas*" OR "heart failure" OR "heart surg*" OR "myocardial infarction*" OR "coronary bypass" OR "coronary artery diseas*" OR "coronary diseas*" OR "coronary syndrome" OR "heart valve repair" OR "heart valve replacement*" OR "heart valve surger*" OR angina OR "cardiac defibrillat*"))
AND
(MH "Home Rehabilitation+" OR MH "Rehabilitation" OR MH "Telerehabilitation" OR MH "Therapeutic Exercise+" OR TI=("exercise therap*" OR "exercise intervention*" OR "exercise training" OR "exercise program*" OR "exercise based" OR "physical exercise" OR "physical training" OR rehabilitat* OR telerehab* OR discharg* OR postdischarg* OR recover* OR following OR "heart failure") OR AB=("exercise therap*" OR "exercise intervention*" OR "exercise training" OR "exercise program*" OR "exercise based" OR "physical exercise" OR "physical training" OR rehabilitat* OR telerehab* OR discharg* OR postdischarg* OR recover*))
AND
(MH "Home Rehabilitation+" OR MH "Telerehabilitation" OR MH "Telemedicine+" OR MH "Internet" OR TI=(telerehabilit* OR erehabilit* OR "tele-rehabilit*" OR "e-rehabilit*" OR telemonitor* OR "tele-monitor*" OR telehealth OR "tele-health" OR telenursing OR "tele-nursing" OR home OR homebased OR virtual* OR remote* OR digital OR distan* OR ehealth OR mhealth OR "e-health" OR "m-health" OR webbased OR "web-based" OR "online-based" OR "internet-based" OR "smartphone-based" OR hybrid OR tele*) OR AB=(telerehabilit* OR erehabilit* OR "tele-rehabilit*" OR "e-rehabilit*" OR telemonitor* OR "tele-monitor*" OR telehealth OR "tele-health" OR telenursing OR "tele-nursing" OR home OR homebased OR virtual* OR remote* OR digital OR distan* OR ehealth OR mhealth OR "e-health" OR "m-health" OR webbased OR "web-based" OR "online-based" OR "internet-based" OR "smartphone-based" OR hybrid))))
AND
(MH "Costs and Cost Analysis+" OR MH "Economics" OR MH "Quality-Adjusted Life Years" OR TI (cost OR costs OR costly OR econom* OR (value N5 money) OR qaly* OR "quality adjusted life year*") OR AB (cost OR costs OR costly OR econom* OR (value NEXT/5 money) OR qaly* OR "quality adjusted life year*"))
AND
(MH "Clinical Trials+" OR TI (random* OR trial*) OR AB (random* OR trial))

Web of Science
TS=(("cardiac" OR "heart" OR "infarct*" OR "coronary") NEAR/10 ("rehabilit*" OR "telerehabilit*" OR "homebased" OR "home based"))
AND
TS=("cost" OR "costs" OR "costly" OR "econom*" OR ("value" NEAR/5 "money") OR "qaly*" OR "quality adjusted life year*")
AND
TS=(random* OR trial)

EconLit (EBSCO)
("cardiac" OR "heart" OR "infarct*" OR "coronary")

AND
(“rehabilit*” OR “telerehabilit*” OR “exercis*” OR “homebased” OR “home”)
AND
(“cost” OR “costs“ OR “costly“ OR “econom*“ OR (“value“ N5 “money“) OR “qaly*“ OR “quality adjusted life year*“)
AND
(random* OR trial)

Clinicaltrials.gov

cardiac rehabilitation AND (cost OR costs OR economic)

International Clinical Trials Registry Platform (ICTRP)

Searched separately:

- cardiac rehabilitation costs
- cardiac rehabilitation cost
- cardiac rehabilitation economic

EU Clinical Trials Register

cardiac rehabilitation

Google Scholar

cardiac rehabilitation cost|costs|economic trial|random|randomized|randomised|randomly home|homebased|tele|telemonitoring|telerehabilitation

S3: Inclusion criteria (PICO)

Population	Adult patients who had either had: • Surgical procedure - *Coronary artery bypass graft (CABG)* - *Heart valve repair/replacement* • Non-surgical procedure - *Percutaneous coronary intervention (PCI)+stents* - *Percutaneous transluminal coronary angioplasty (PTCA)* • Acute events caused by coronary heart disease - *Myocardial infarction (MI)* - *Heart failure (HF)* - *Angina pectoris/unstable angina*
Intervention	Alternative CR program: • Home-based rehabilitation • Telerehabilitation • Hybrid rehabilitation (including adds-on to traditional CR)
Comparator	Centre-based CR
Outcome	• Cost effectiveness - *Incremental cost-effectiveness ratio (ICER)* • Cost utility - *Incremental cost-utility ratio (ICUR)* • Cost and effectiveness - *Total cost (health service perspective and/or societal perspective); effectiveness (quality of life and/or quality adjusted life years)*
Study type	RCT

S4: Data Request Form

Part 1: General Study Characteristics	
First author (and co-authors*)	
Year of publication*	
Setting (country, setting, locations)	
Number of participants	N in intervention group: N in control group:
Patient characteristics (demographics)	
The intervention	
The comparator (control group)	
Study perspective (society, health care, care provider, patient…)	
Time frame of the analysis (time horizon)	
Currency (and currency year)	
Part 2: Measurements and Results	
Health outcome measurements (e.g., EQ-5D, SF-12, SF-36, etc..)	
Health outcome results *(please also provide number of participants in analysis, SD, and confidence interval)*	**Assessment at baseline** Intervention group: Control group: Mean difference:
	Assessment at _____ months Intervention group: Control group: Mean difference:
	Assessment at _____ months Intervention group: Control group: Mean difference:
Type and category of costs (e.g., direct health care costs, indirect heath care costs, and intangible costs, etc…)	
Cost *(please also provide number of participants in analysis, SD, and confidence interval)*	Intervention group: Control group: Mean difference:
QALY gain* *(please also provide number of participants in analysis, SD, and confidence interval)*	Intervention group: Control group: Mean difference:
Incremental cost-effectiveness ratios	
Other relevant results*	

** If applicable*

S5: Description of the Intervention and Control Group

Author (year)	Guideline/Manual	Communication methods, device & facilities	Intervention Group	Active Control group
Marchionni (2003)	American College of Sports Medicine guidelines	*Communication method:* - Home visit by physical therapist *Device & facilities provided:* - Wristwatch digital pulse monitor - Cycle ergometer	"Patients randomized to Home-CR participated in 4 to 8 supervised instruction sessions in the CR unit, where they were taught necessary precautions and how to perform their training at home. Patients received cardiovascular risk factor management counseling at each in-hospital session and were invited to join a monthly family-oriented support group. After the instruction phase, patients received an exercise prescription similar to that of the Hosp-CR group, a wristwatch digital pulse monitor, a cycle ergometer, and a log book to record the heart rate attained during each exercise session and reasons for not finishing or missing a session. A physical therapist made home visits every other week to adjust if necessary the exercise prescription, to enhance adherence with intervention, and to record the number of completed sessions and distance cycled. At the end of the 2-month training period, the cycle ergometer was made available for additional patients randomized to Home-CR." (Marchionni, 2003)	"The Hosp-CR program consisted of 40 exercise sessions: 24 sessions (3/wk) of endurance training on a cycle ergometer (5-minute warmup, 20-minute training at constant workload, 5-minute cool down, and 5-minute postexercise monitoring) plus 16 (2/wk) 1-hour sessions of stretching and flexibility exercises. In both sessions, ECG was monitored by telemetry, and exercise intensity was set at 70% to 85% of heart rate attained during baseline symptom-limited exercise test. Patients received cardiovascular risk factor management counseling twice per week and were invited to join a monthly support group together with family members." (Marchionni, 2003)
Taylor (2007)	the *Heart Manual*	*Communication method:* - Home visit by nurse - Telephone calls	"Patients in this group were seen during their hospital admission by a cardiac rehabilitation nurse and issued with the *Heart Manual* to use over six consecutive weeks. This step-by-step guide is a comprehensive cardiac rehabilitation programme using a structured programme of exercise, stress management, and education. The cardiac rehabilitation nurse made a home visit in the first week after discharge followed up by telephone calls over six weeks. Typically, a telephone call was made in weeks 2, 3, 4, and 6. The purpose of the 5–10 min phone contact was to check patient's progress and in this respect was similar to the purpose described in the original study. Patients were advised to start using their manual during the first week after discharge." (Dalal 2007)	"Patients attended outpatient classes once a week for 8–10 weeks. Classes lasted 2 h each and were conducted in groups of 8–10 people in the local hospital or, for a small number of patients, in one of the two community centres. Three different multidisciplinary teams delivered the programme, but the duration and content of the classes were comparable with cardiac rehabilitation delivered in outpatient settings in the United Kingdom. In line with current recommendations patients were also encouraged to exercise at home, building up to five sessions a week. Each team included a cardiac rehabilitation nurse, physiotherapist, or exercise therapist, with input from a psychologist or occupational therapist, pharmacist and dietician. Patients typically attended their first session 4–6 weeks after discharge." (Dalal 2007)
Jolly (2009)	the *Heart Manual*	*Communication method:* - Home visit by nurse - Telephone contact	"The rehabilitation programmes included exercise, relaxation, education and lifestyle counselling." (Jolly 2009) "The home-based programme consisted of a manual, three home visits (at 10 days, 6 weeks and 12 weeks) and telephone contact at 3 weeks. Patients who had had an MI were discharged home with the *Heart Manual* (2nd edition) or an adapted version of the *Heart Manual* for revascularization patients which commenced on their discharge. Additional visits were made as deemed necessary by the rehabilitation nurse. All the nurses who provided the home-based cardiac rehabilitation programme attended a two-day training course run by the originators of the *Heart Manual*. The manual encourages patients to build up their exercise gradually to achieve a minimum of 15 minutes of moderately intense activity daily." (Jolly 2009)	"The four centre-based programmes varied in length, including nine sessions at weekly intervals, 12 sessions over 8 weeks and 24 individualised sessions over 12 weeks. Programmes commenced between 4 weeks and 8 weeks following the cardiac event. Patients exercised to 65–75% of their predicted maximal heart rate and the exercise element of the sessions lasted from 25 minutes to 40 minutes plus warm-up and cool-down elements." (Jolly 2009)
Cowie (2014)	/	*Communication method:* - Telephone *Device & facilities provided:* - DVD - Heart rate monitor	"The home-training intervention consisted of a one-hour, interval training, aerobic circuit DVD which participants completed twice per week, for eight weeks." (Cowie 2014)	"The hospital-training intervention was delivered as a one-hour, interval training, aerobic circuit class, twice per week, for eight weeks." (Cowie 2014)
Whittaker (2014)	/	*Communication method:* - Daily text messaging *Device & facilities provided:* - Mobile phone - Wellness Diary - Wellness web portal	"Participants in the telehealth group received a mobile phone, Wellness Diary and a Wellness web portal, with daily text messaging." (Whittaker 2014) "Both groups received comprehensive rehabilitative care encompassing exercise, risk modification and mentoring." (Whittaker 2014)	"Participants in the usual care group received the standard 6-week hospital-based outpatient cardiac rehabilitation programme, including gym sessions. Both groups received comprehensive rehabilitative care encompassing exercise, risk modification and mentoring." (Whittaker 2014)
Kidholm (2016)	CR guideline	*Communication method:* - Home visit by project assistant *Device & facilities provided:* - Tablet computer (web access to health record and measurements) - Activeheart.dk (a digital toolbox)	"The patient received training in the use of the different devices and the digital rehabilitation plan, and a doctor prescribed how often the patient needed to measure blood pressure, pulse, and weight, most often twice a week, whereas steps were measured every day. The data were transmitted via a secure transmission line. Patients, relatives, and healthcare professionals from the hospital and healthcare centers were able to communicate and share data from the personal health record. In addition, patients and relatives had access to Activeheart.dk (a digital toolbox with information on rehabilitation topics, activities, and videos showing patients describing their experiences of being a heart patient and appropriate exercises for after surgery)." (Kidholm 2016) "The telerehabilitation program lasted for 3 months." (Kidholm 2016)	"The control group followed a traditional rehabilitation program at the hospital or healthcare center based on CR guidelines." (Kidholm 2016)
Frederix (2016)	/	*Communication method:* - Emails and/or text messages *Device & facilities provided:* - Motion sensor (Yorbody accelerometer) and associated web service	"Intervention group patients received a 24-week internet-based, comprehensive telerehabilitation programme in addition to the conventional centre-based cardiac rehabilitation." (Frederix 2016) "The telerehabilitation programme started at week six of the centre-based cardiac rehabilitation." (Frederix 2016)	"Both groups participated in the 12-week conventional centre-based cardiac rehabilitation programme, including 45 pluridisciplinary rehabilitation sessions with at least two training sessions per week. Patients were instructed to exercise for 45–60 min per session at a target heart rate and/or workload corresponding to an intensity between their first ventilatory threshold and respiratory compensation point. Endurance training consisted of walking/running, and/or cycling and arm cranking." (Frederix 2016)
Frederix (2017)	/	*Communication method:* - Emails and/or text messages *Device & facilities provided:* - Motion sensor (Yorbody accelerometer) and associated web service	"The intervention group patients were randomly assigned and enrolled at time point t_0, when they were halfway through their classic 12-week centre-based CR programme. They then received the remaining 6 weeks of centre-based CR and in addition 6 months of cardiac telerehabilitation." (Frederix 2017) "During the initial 6 weeks of the telerehab phase, patients thus received both centre-based CR and telerehabilitation. In cardiac telerehabilitation, patients were provided with patient specific exercise training prescriptions." (Frederix 2017)	"The control group patients were randomly assigned and enrolled at time point t_0, when they were halfway through their classic 12-week centre-based CR programme. They initially received the remaining 6 weeks of centre-based CR (the no telerehab phase) between time points t_0 and t_1. They never received telerehabilitation." (Frederix 2017)
Kraal (2017)	National guideline: Multidisciplinary	*Device & facilities provided:* - Web application (Garmin Connect)	"In both groups, all treatment components of CR other than exercise training were performed in the outpatient clinic as usual. Exercise training was prescribed according to the current national and	"Patients in the centre-based group received group-based training in the outpatient clinic, supervised by

	guidelines for CR - artrevalidatie 2011; and international guideline.	- Heart rate monitor (Garmin) - Triaxial accelerometer - Chest strap	international guidelines. Both groups participated a training programme of 12 weeks with at least two training sessions a week. Session duration was 45–60 min and all sessions were based on continuous training with an intensity of 70–85% of the maximal heart rate (HRmax) assessed during the cardiopulmonary exercise test at baseline." (Kraal 2017)	two physical therapists specialised in CR. All patients received an individually tailored training programme on a cycle ergometer and treadmill." (Kraal 2017)
Hwang (2019)	Australian exercise guidelines for patients with CHF	*Communication method:* - Online video conference *Device & facilities provided:* - Laptop computer - Mobile broadband device - Automatic sphygmomanometer - Finger pulse oximeter - Free weights - Resistance bands	"The telerehabilitation program consisted of a 12-week exercise and education intervention delivered into the patient's home twice-weekly. Each exercise session was supervised by a physiotherapist and the education discussion was facilitated by a physiotherapist and a nurse. The physiotherapist guided participants through a supervised exercise program similar to the control group, such that both groups received similar contact time with the health professionals and comparable exercise dose. A commercially available online video conferencing platform was used for synchronous audiovisual communication with groups of up to four participants. Educational topics were delivered as PowerPoint presentations with voice narrations and viewed by participants in their own time in preparation for a 15-minute online group discussion held at the start of each telerehabilitation session. Telerehabilitation equipment was loaned to the participants as required, including a laptop computer, a mobile broadband device connected to the 3G wireless broadband internet, automatic sphygmomanometer, finger pulse oximeter, free weights and resistance bands. Participants received a demonstration session, either at the hospital or during a home visit, to become familiar with the equipment." (Hwang 2019)	"The control group received a centre-based rehabilitation program based on current recommended guidelines encompassing education, aerobic and strength training exercise. The program was delivered to groups of up to eight participants in hospitals and was of the same duration and frequency as the telerehabilitation program. Each exercise session was facilitated by a physiotherapist and a nurse, and the duration was approximately 60 minutes. The control group attended education sessions at the hospital on the same day as the exercise sessions and each education session was approximately 60 minutes. These education sessions were delivered by a multidisciplinary team including the nurse, dietitian, physiotherapist, occupational therapist, social worker and pharmacist." (Hwang 2019)
Maddison (2019)	ACSM's Guidelines for exercise testing and prescription.	*Device & facilities provided:* - A platform comprised with a smartphone and chest-worn wearable sensor (BioHarness 3, Zephyr Technology, USA) - Bespoke smartphone - Web apps - Custom middleware	"REMOTE-CR comprised three exercise sessions per week over 12 weeks and encouragement to be active ≥5 days per week. Prescribed session duration and intensity level ranged from 30 to 60 min (including warm-up and cool-down phases) and 40%–65% heart rate reserve, respectively; intensity level was adjusted to optimise physiological adaptation without inducing abnormal clinical signs or symptoms." (Maddison 2019)	"CBexCR comprised 12 weeks of supervised exercise delivered by clinical exercise physiologists in cardiac rehabilitation clinics." (Maddison 2019)
Brouwers (2021)	Evidence-based Algorithms (NL); European Society of Cardiology clinical guidelines	*Communication method:* - Video consultations with the physical therapist through the web-based application *Device & facilities provided:* - Accelerometer (ActiGraph) - Heart rate monitor (Mio Alpha) - Triaxial accelerometer	"After allocation to the CTR intervention group, patients received access to a web-based application and were provided with a wrist-worn heart rate monitor (Mio Alpha; Physical Enterprises, Inc) and a hip-worn triaxial accelerometer (ActiGraph wGT3x-BT; Actigraph, LLC). The exercise training module began with 6 supervised group-based sessions, which were similar to those provided to the control group. Exercise training was then continued at home unless the patient preferred otherwise. Weekly video consultations with the physical therapist through the web-based application were scheduled until individual goals were achieved or the program was completed and evaluated. (Brouwers 2021)	"Patients in the center-based CR control group participated in group-based training sessions under the supervision of physical therapists and exercise specialists. Aerobic training was prescribed with a frequency aimed at two 60-minute sessions per week. Because exercise training programs were individually tailored, the number and intensity of supervised sessions varied among patients." (Brouwers 2021)
De Lima (2022)	Cardiac College Manual	*Communication method:* - Phone calls *Device & facilities provided:* - Heart rate monitor - Pedometer (Omron)	"The parameters for monitoring the exercise prescription compliance were the same for the Home-CR and TCR groups. The sessions consisted of 5 to 10 min of warm-up, 40 min of aerobic activity with heart rate varying between 60% and 80% heart rate reserve (60%, 70% and 80% heart rate reserve in the first, second and third month, respectively) and 5-10 min cool-down." (De Lima 2022) "Both groups were instructed to reach the frequency of five times a week, totaling 60 sessions." (De Lima 2022) "Home-CR group did two supervised sessions at the CR center monitored by HR monitor and 58 (96.7%) non-supervised sessions at home also accompanied by a HR monitor. The HR monitor used in both groups monitored the HR through a strap attached to the participant's chest and the HR was transmitted to a watch. The home-CR group also received weekly phone calls to check the correct use of the monitor as well as to encourage and check the correct execution of exercises and use of the pedometer (HJA-310-Omron®) as an incentive. Individual information about exercise intensity and the number of sessions during the week were registered manually in a personal diary." (De Lima 2022) CR programme duration: 12 weeks.	"TCR group (control) attended 24 (40%) supervised sessions at the CR center (3 per week in the first month, 2 per week in the second month and 1 per week in the third month) with exercise intensity monitored by HR monitor (G Pulse®) and based on the Borg Scale, and 36 non-supervised sessions at home (intensity based on the Borg Scale)." (De Lima 2022)

S6: Risk of Bias Assessment

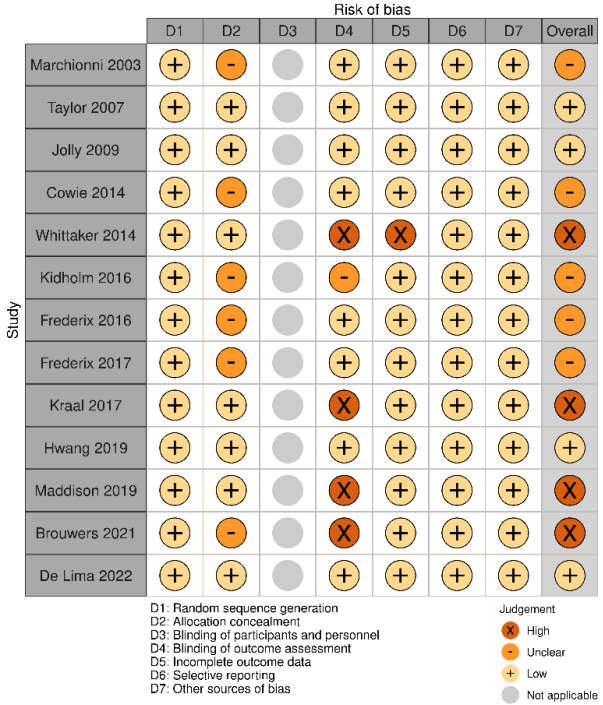


Figure S1: Risk of bias assessment for each included study

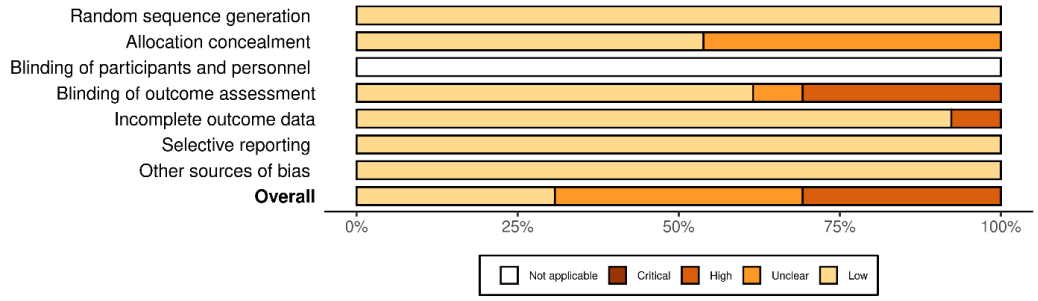


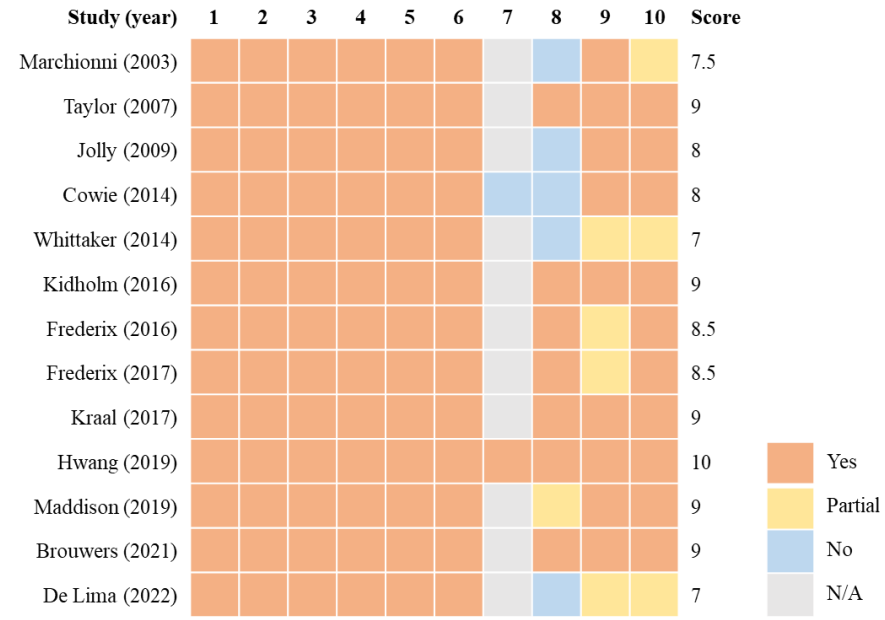
Figure S2: Summary of risk of bias assessment about each item (as percentage across the included studies)

Risk of Bias items	Assessment	Support for judgement
Marchionni 2003		
1. Random sequence generation (selection bias)	Low	"Within each age group, participants were randomized to Hosp-CR, Home-CR, or no CR. The proportion of men and women in the resulting 9 cells was predefined to ensure across age groups the same gender distribution observed in our unit over the year before study onset." (Marchionni 2003) "Enrolled patients in each of the three age groups are randomly assigned to one of the three intervention groups, following a randomized block design." (Fattirolli 1998)
2. Allocation concealment (selection bias)	Unclear	Not described in sufficient detail.
3. Blinding of participants and personnel (performance bias)	High	Not described in sufficient detail.
4. Blinding of outcome assessment (detection bias)	Low	"Testing personnel were blinded to patient assignment." (Marchionni 2003) "Investigators and technicians performing study evaluations both at baseline and during follow-up are unaware of patient assignment." (Fattirolli 1998)
5. Incomplete outcome data addressed (attrition bias)	Low	Sufficient information of drop-out in each group; reasons for attrition/exclusions were reported.
6. Selective reporting (reporting bias)	Low	Selective outcome reporting bias not detected. Predefined outcomes were reported.
7. Other bias (please specify):	Low	No other bias detected.
Overall	**Low**	
Taylor 2007		
1. Random sequence generation (selection bias)	Low	"The computerized random number trial allocation sequence was determined before the study." (Dalal 2007) In this trial, patients who expressed a preference and declined randomization were given their choice of CR in the preference arms. Therefore, there were 4 Arms: the randomized (home and hospital-based CR) arms; and the preference (home and hospital-based CR) arms. In this review we only focus on the randomized arms.
2. Allocation concealment (selection bias)	Low	"Their allocation was transferred to sequentially numbered, opaque, sealed envelopes and concealed from the research nurse who carried out the baseline assessment." (Dalal 2007)
3. Blinding of participants and personnel (performance bias)	High	"Neither patients nor staff could be blinded to allocation." (Dalal 2007)
4. Blinding of outcome assessment (detection bias)	Low	"The person assessing the primary outcome questionnaires was blinded to allocation." (Dalal 2007)
5. Incomplete outcome data addressed (attrition bias)	Low	"We intended to collect cost and EQ-5D data for all 104 randomized patients; however, for logistical reasons (in particular, the availability of healthcare resource information) full data sets at 9 months were available for 48 (80%) and 32 (73%) patients from the home and hospital-based groups, respectively. No significant differences were seen in age (P=0.634) or sex (P=0.410) between those with and without full economic data." (Taylor 2007)
6. Selective reporting (reporting bias)	Low	Selective outcome reporting bias not detected. Predefined outcomes were reported.
7. Other bias (please specify):	Low	No other bias detected.
Overall	**Low**	
Jolly 2009		
1. Random sequence generation (selection bias)	Low	"Individual patient randomization was undertaken by an independent clinical trials unit using a computerized program and minimizing for age, sex, ethnicity, initial diagnosis and hospital of recruitment." (Jolly 2007)
2. Allocation concealment (selection bias)	Low	"We reduced the likelihood of allocation bias by using an independent group for the randomization." (Jolly 2007) Allocation was undertaken by the Birmingham Cancer Clinical Trials Unit, a group that was independent from the trial team.
3. Blinding of participants and personnel (performance bias)	High	"In a trial of CR it is obviously impossible to blind patients and their healthcare staff as to which intervention they receive." (Jolly 2007)
4. Blinding of outcome assessment (detection bias)	Low	"We tried to keep the outcome assessment blinded by the follow-up assessments being undertaken by a nurse who had not recruited or provided treatment to the patient." (Jolly 2007) Data on outcomes were measured by questionnaire and clinical assessment at a hospital site at 6 months and 12 months by a nurse blinded to the treatment allocation of the patient.
5. Incomplete outcome data addressed (attrition bias)	Low	"As the study had very low rates of loss to follow-up and with equal loss in each arm, it is unlikely that we had attrition bias between the groups due to loss to follow-up." (Jolly 2007)
6. Selective reporting (reporting bias)	Low	Selective outcome reporting bias not detected. Predefined outcomes were reported.
7. Other bias (please specify):	Low	No other bias detected.
Overall	**Low**	
Cowie 2014		
1. Random sequence generation (selection bias)	Low	"Participants were randomized (using concealed envelopes) to one of three groups." (Cowie 2011)
2. Allocation concealment (selection bias)	Unclear	Not described in sufficient detail.
3. Blinding of participants and personnel (performance bias)	High	Not described in sufficient detail.
4. Blinding of outcome assessment (detection bias)	Low	"The researcher collating and analysing the *activ*PAL^{TM} data was blind to participants' randomization, except when measuring long-term activity level." (Cowie 2011)
5. Incomplete outcome data addressed (attrition bias)	Low	The study had very low rates of loss to follow-up and with equal loss in each arm.
6. Selective reporting (reporting bias)	Low	Selective outcome reporting bias not detected. Predefined outcomes were reported.
7. Other bias (please specify):	Low	
Overall	**Low**	
Whittaker 2014		
1. Random sequence generation (selection bias)	Low	"Permuted-block randomization, by computer-generated random numbers with variable block sizes of 4, 6 and 8 using sequentially numbered opaque, sealed envelopes, was conducted prior to baseline assessment to randomize patients to one of two parallel groups." (Varnfield 2014)
2. Allocation concealment (selection bias)	Low	"The Project Officer who obtains the patient consent will randomize them by using a sequence of sealed envelopes containing the allocation for each patient. The randomization table is concealed from the Project Officer and created and maintained by the AEHRC." (Walters 2010)
3. Blinding of participants and personnel (performance bias)	High	"While a blinded RCT is preferred in validating treatments, it is hard to blind patients to new treatment modes." (Varnfield 2014)

4. Blinding of outcome assessment (detection bias)	High	"Self-observations and measurements are entered to the Wellness Diary application." (Walters 2010)
5. Incomplete outcome data addressed (attrition bias)	High	The reasons of dropouts are well reported. But different in the two groups. "More than 70% of the 44 dropouts (including non-uptake or non-completion) were from TCR." "The main TCR dropout reasons were logistical (25%) and competing life demands (14%)." (Varnfield 2014)
6. Selective reporting (reporting bias)	Low	The predefined outcomes were reported. But EQ-5D at 6 month were only reported in a Box Plot without specific score.
7. Other bias (please specify):	Low	No other bias detected.
Overall	**Unclear**	
Kidholm 2016		
1. Random sequence generation (selection bias)	Low	"Randomization into groups was done using an automatically generated list for each block with an equal number of intervention and control numbers in random order, so as to ensure an even distribution in each group in varying sizes." (Kidholm 2016)
2. Allocation concealment (selection bias)	Unclear	"A project nurse performed the randomization." (Kidholm 2016) Not described in sufficient detail.
3. Blinding of participants and personnel (performance bias)	High	Not described in sufficient detail.
4. Blinding of outcome assessment (detection bias)	Unclear	Not described in sufficient detail.
5. Incomplete outcome data addressed (attrition bias)	Low	"Attrition was acceptable, as 88%of the patients completed the 6-month follow-up assessment (90% from the intervention group and83%fromthe control group), and 84% completed the 12-month follow-up (89% from the intervention group and 80% from the control group)." (Kidholm 2016)
6. Selective reporting (reporting bias)	Low	Selective outcome reporting bias not detected.
7. Other bias (please specify):	Low	No other bias detected.
Overall	**Low**	
Frederix 2016		
1. Random sequence generation (selection bias)	Low	"A central computerized randomization system, using block randomization, ascertained equal distribution of patients in the different recruiting hospitals for both treatment arms)." (Frederix 2016)
2. Allocation concealment (selection bias)	Unclear	Not described in sufficient detail
3. Blinding of participants and personnel (performance bias)	High	Not described in sufficient detail.
4. Blinding of outcome assessment (detection bias)	Low	"All outcome measurements were assessed by trial investigators (blinded to treatment allocation)." (Frederix 2017)
5. Incomplete outcome data addressed (attrition bias)	Low	Sufficient information of drop-out in each group; reasons for attrition/exclusions were reported.
6. Selective reporting (reporting bias)	Low	Selective outcome reporting bias not detected. Predefined outcomes were reported.
7. Other bias (please specify):	Low	No other bias detected.
Overall	**Low**	
Frederix 2017		
1. Random sequence generation (selection bias)	Low	"A central computerized randomization system, using block randomization, ascertained equal distribution of patients in the different recruiting hospitals for both treatment arms)." (Frederix 2016)
2. Allocation concealment (selection bias)	Unclear	Not described in sufficient detail
3. Blinding of participants and personnel (performance bias)	High	Not described in sufficient detail.
4. Blinding of outcome assessment (detection bias)	Low	"All outcome measurements were assessed by trial investigators (blinded to treatment allocation)." (Frederix 2017)
5. Incomplete outcome data addressed (attrition bias)	Low	Sufficient information of drop-out in each group; reasons for attrition/exclusions were reported.
6. Selective reporting (reporting bias)	Low	Selective outcome reporting bias not detected. Predefined outcomes were reported.
7. Other bias (please specify):	Low	No other bias detected.
Overall	**Low**	
Kraal 2017		
1. Random sequence generation (selection bias)	Low	"Allocation was performed with dedicated computer software and numbered." (Kraal 2017) Allocation is based on randomization with variable block size (two or four), performed with dedicated computer software by a researcher (NP) who is not present at the time of allocation.
2. Allocation concealment (selection bias)	Low	"Sealed opaque envelopes were used to conceal the allocation of patients." (Kraal 2017) To conceal allocation, numbered and sealed opaque envelopes are opened between the baseline cardiopulmonary exercise test and the start of exercise training.
3. Blinding of participants and personnel (performance bias)	High	"By design, we are unable to blind participants for allocation." (Kraal 2017)
4. Blinding of outcome assessment (detection bias)	High	"A first limitation of our study was the lack of blinding for the physician for patient allocation during the assessments of physical fitness at discharge and follow-up. Therefore, knowledge of group allocation could have affected the assessments." (Kraal 2017)
5. Incomplete outcome data addressed (attrition bias)	Low	Sufficient information of drop-out in each group; reasons for attrition/exclusions were reported.
6. Selective reporting (reporting bias)	Low	Selective outcome reporting bias not detected. Predefined outcomes were reported.
7. Other bias (please specify):	Low	No other bias detected.
Overall	**Low**	
Hwang 2019		

1. Random sequence generation (selection bias)	Low	"Consenting participants were allocated 1:1 using a non-blocked random allocation sequence." (Hwang 2017)
2. Allocation concealment (selection bias)	Low	"Allocation was concealed through the use of opaque, sealed and numbered envelopes, and administered by an experienced, independent researcher at a central location." (Hwang 2017)
3. Blinding of participants and personnel (performance bias)	High	"The treating healthcare professionals could not be blinded to group allocation." (Hwang 2017)
4. Blinding of outcome assessment (detection bias)	Low	"Participants were asked not to disclose their group allocation to the blinded assessors." (Hwang 2017)
5. Incomplete outcome data addressed (attrition bias)	Low	Sufficient information of drop-out in each group; reasons for attrition/exclusions were reported.
6. Selective reporting (reporting bias)	Low	Selective outcome reporting bias not detected. Predefined outcomes were reported.
7. Other bias (please specify):	Low	No other bias detected.
Overall	**Low**	
Maddison 2019		
1. Random sequence generation (selection bias)	Low	"Participants were randomised (1:1) to receive REMOTE-CR (intervention) or CBexCR (control) using a computer-generated sequence—created by a blinded statistician—that included variable blocking (n=2/4) and stratification (sex/study site)." (Maddison 2019)
2. Allocation concealment (selection bias)	Low	"Treatment allocation was concealed until completion of baseline assessment in sequentially numbered, sealed, opaque envelopes." (Maddison 2019)
3. Blinding of participants and personnel (performance bias)	High	"Participants could not be blinded to treatment allocation." (Maddison 2019)
4. Blinding of outcome assessment (detection bias)	High	Not all the outcome assessments were blinded. Only staff performing $\dot{V}O_2$max testing were blinded to treatment allocation.
5. Incomplete outcome data addressed (attrition bias)	Low	Sufficient information of drop-out in each group; reasons for attrition/exclusions were reported.
6. Selective reporting (reporting bias)	Low	Selective outcome reporting bias not detected. Predefined outcomes were reported.
7. Other bias (please specify):	Low	No other bias detected.
Overall	**Low**	
Brouwers 2021		
1. Random sequence generation (selection bias)	Low	"After baseline measurements were obtained, the investigator (R. B.) randomly allocated patients on a 1:1 ratio to receive CTR (intervention group) or center-based CR (control group) using computerized block randomization." (Brouwers 2021)
2. Allocation concealment (selection bias)	Unclear	Not described in sufficient detail.
3. Blinding of participants and personnel (performance bias)	High	"The investigator, supervising health care professionals (one of whom was H. K.), and patients were not blinded to group allocation because of the nature of the intervention." (Brouwers 2021)
4. Blinding of outcome assessment (detection bias)	High	"Patients reported presenteeism and absenteeism at work using the Productivity Cost Questionnaire from the Institute for Medical Technology Assessment, and caregivers reported informal care using the Valuation of Informal Care Questionnaire from the Institute for Medical Technology Assessment." (Brouwers 2021) Presenteeism and absenteeism self-reported by patients and caregivers who were not blinded to the trial.
5. Incomplete outcome data addressed (attrition bias)	Low	Sufficient information of drop-out in each group; reasons for attrition/exclusions were reported.
6. Selective reporting (reporting bias)	Low	Selective outcome reporting bias not detected. Predefined outcomes were reported.
7. Other bias (please specify):	Low	No other bias detected.
Overall	**Low**	
De Lima 2022		
1. Random sequence generation (selection bias)	Low	"The randomization sequence was generated by a professor not involved in the study using the website www.randomization.com in random blocks of four: for every 4 volunteers, 2 could be randomly allocated to the home-CR group and 2 to the TCR group." (De Lima 2022)
2. Allocation concealment (selection bias)?	Low	"To ensure allocation concealment, the principal investigator had the allocation sequence in a password-protected file, and only provided randomization information to the PhD student once it was confirmed that the participant was eligible." (De Lima 2022)
3. Blinding of participants and personnel (performance bias)	High	"Due to the nature of the intervention, participants could not be blinded to treatment allocation." (De Lima 2022)
4. Blinding of outcome assessment (detection bias)	Low	"A physiotherapist blinded to the random allocation was responsible for pre and post-test assessment and data entry." (De Lima 2022)
5. Incomplete outcome data addressed (attrition bias)	Low	Sufficient information of drop-out in each group; reasons for attrition/exclusions were reported.
6. Selective reporting (reporting bias)	Low	Selective outcome reporting bias not detected. Predefined outcomes were reported.
7. Other bias (please specify):	Low	No other bias detected
Overall	**Low**	

S7: Quality Assessment using the Drummond checklist



* Poor (1–3 points), Average (4–7 points) and Good (8–10 points).

1. Was a well-defined question posted in an answerable form?
2. Was a comprehensive description of the competing alternatives given? (i.e. can you tell who? Did what? To whom? Where? And how often?)
3. Was there evidence that the programme's effectiveness had been established?
4. Were all the important and relevant costs and consequences for each alternative identified?
5. Were costs and consequences measured accurately in appropriate physical units? (e.g. hours of nursing time, number of physical visits, lost work-days, gained life-years)?
6. Were costs and consequences valued credibly?
7. Were costs and consequences adjusted for differential timing?
8. Was an incremental analysis of costs and consequences of alternatives performed?
9. Was uncertainty in the estimates of costs and consequences adequately characterized?
10. Did the presentation and discussion of study results include all issues of concern to users?

S8: Health Outcome Results (Baseline and follow-up)

Author (year)	Health Outcome (measurement)	Assessment Point	Health Outcome (ACRP)	Health Outcome (CBCR)	Mean difference [95% CI]	Adjusted mean difference [95% CI]
Marchionni (2003)	SIP	Baseline	Age 45-65: 5.6 ± 0.7 (n=90) Age 66-75: 5.8 ± 0.7 (n=90) Age>75: 5.3 ± 0.8 (n=90)	Age 45-65: 8.4 ± 1.1 (n=90) Age 66-75: 6.6 ± 0.7 (n=90) Age>75: 8.8 ± 1.0 (n=90)	/	/
	SIP	14 months	In a graph (without specific numbers)	In a graph (without specific numbers)	/	/
Taylor (2007)	EQ-5D	Baseline	0.76 (SD 0.02)	0.74 (SD 0.03)	*p=0.351*	/
	EQ-5D	9 months	0.74 (SD 0.04)	0.78 (SD 0.04)	*p=0.570*	/
	QALY gained	9 months	0.74 (SD 0.03, n=54)	0.81 (SD 0.03, n=35)	-0.06 [-0.15-0.02] *p=0.156*	/
Jolly (2009)	EQ-5D	Baseline	0.737 (SD 0.24, n=257)	0.757 (SD 0.21, n=262)	-0.020 [–0.059 to 0.019]	-0.018 [–0.057 to 0.020]
	EQ-5D	12 months	0.744 (SD 0.27, n=223)	0.759 (SD 0.23, n=229)	-0.016 [-0.063 to 0.031]	-0.010 [–0.054 to 0.034]
Cowie (2014)	SF-36 [Physical health]	Baseline	35.29 (SD 10.31)	31.33 (SD 7.97)	*p>0.05*	/
		8 weeks	34.01 (SD 11.04)	33.83 (SD 10)	*p>0.05*	/
	SF-36 (PCS) gained	8 weeks	*p=0.34*	*p=0.38*	/	/
	SF-36 [Mental health]	Baseline	45.18 (SD 12.24)	46.17 (SD 12.05)	*p>0.05*	/
		8 weeks	44.44 (13.23)	48.25 (11.21)	*p>0.05*	/
	SF-36 (MCS) gained	8 weeks	*p=0.71*	*p=0.81*	/	/
Whittaker (2014)	EQ-5D	Baseline	Median 0.83 (IQR 0.8-1.0, n=48) Median 0.84 (IQR 0.8-0.9, n=38)	Median 0.80 (IQR 0.7-1.0, n=38) Median 0.83 (IQR 0.8-0.9, n=23)	*p=0.5*	/
	EQ-5D	6 weeks	Median 0.92 (IQR 0.9-1.0, n=38)	Median 0.82 (IQR 0.7-0.9, n=23)	/	/
	EQ-5D gained	6 weeks	/	/	/	0.08 EQ-5D index [0.02-0.14] *p=0.01*
Kidholm (2016)	QALY (SF-36)	Baseline	0.610 (n=61) [0.580 to 0.640]	0.620 (n=53) [0.590 to 0.650]	*p=0.608*	/

	QALY (SF-36)	12 months	0.700 (n=61) [0.660 to 0.740]	0.710 (n=53) [0.670 to 0.740]	*p=0.751*	/
	QALY gained	12 months	0.089 (n=61) [0.050 to 0.130]	0.085 (n=53) [0.050 to 0.120]	0.004 *p=0.904*	/
Frederix (2016)	QALY (EQ-5D)	Baseline	0.74 (n=69)	0.77 (n=70)	/	/
	QALY gained	6 months	0.06 (n=69)	-0.09 (n=70)	/	/
	Adjusted mean QALY	6 months	0.39 (n=69)	0.36 (n=70)	/	0.03 (0.026)
Frederix (2017)	QALY (EQ-5D) gained	24 months	0.07 (n=62)	-0.15 (n=64)	0.22	/
	HeartQoL [Physical subscale]	Baseline (t_0)	2.23 (SD 0.67)	2.27 (SD 0.61)	/	/
		12 months (t_1)	2.52 (SD 0.52)	2.28 (SD 0.63)	/	/
		24 months (t_2)	2.72 (SD 0.51)	2.36 (SD 0.69)	/	/
	HeartQoL [Emotional subscale]	Baseline (t_0)	2.36 (SD 0.75)	2.41 (SD 0.70)	/	/
		12 months (t_1)	2.53 (SD 0.54)	2.41 (SD 0.69)	/	/
		24 months (t_2)	2.72 (SD 0.52)	2.50 (SD 0.59)	/	/
	HeartQoL [Global score]	Baseline (t_0)	2.27 (SD 0.63)	2.31 (SD 0.59)	/	/
		12 months (t_1)	2.53 (SD 0.44)	2.32 (SD 0.58)	/	/
		24 months (t_2)	2.75 (SD 0.37)	2.36 (SD 0.65)	/	/
Kraal (2017)	SF-36	Baseline	5.62 (SD 0.20)	5.45 (SD 0.14)	/	/
	SF-36	12 months	5.75 (SD 0.10)	5.43 (SD 0.12)	*p=0.609*	/
	QALY	12 months	0.77 (SD 0.13, n=45)	0.78 (SD 0.08, n=45)	*p=0.73*	/
Hwang (2019)	EQ-5D	Baseline	0.73 (SD 0.13, n=24)	0.69 (SD 0.26, n=29)	/	/
	EQ-5D	6 months	0.73 (SD 0.22)	0.74 (SD 0.25)	/	/
	Change in EQ-5D	6 months	/	/	-0.06 [-0.16, 0.03] *p>0.05*	/
	QALY	6 month	0.36 (SD 0.09)	0.36 (SD 0.1)	0 [-0.06, 0.05] *p>0.05*	/

Maddison (2019)	EQ-5D	Baseline	0.91 (SD 0.10)	0.91 (SD 0.10)	/	/
	EQ-5D	6 months	0.89 (SD 0.13, n=65)	0.92 (SD 0.09, n=69)	/	-0.03 [-0.06 to 0.01]
Brouwers (2021)	EQ-5D-5L	3 months	0.859	0.850	*p>0.05*	
	EQ-VAS	3 months	0.885	0.878	*p>0.05*	
	QALY (EQ-5D-5L)	1ST quarter (3months)	0.814 (SE 0.011, n=153)	0.815 (SE 0.010, n=147)	−0.001 *p=0.94*	/
	QALY (EQ-5D-5L)	4th quarter (12 months)	0.851 (SE 0.015, n=153)	0.848 (SE 0.016, n=147)	0.002 *p=0.91*	/
	QALY (EQ-5D-5L)	Overall	0.841 (SE 0.012, n=153)	0.844 (SE 0.011, n=147)	−0.004 *p=0.82*	/
	QALY (EQ-VAS)	1ST quarter (3 months)	0.827 (SE 0.010, n=153)	0.828 (SE 0.009, n=147)	−0.004 *p=0.90*	/
	QALY (EQ-VAS)	4th quarter (12 months)	0.889 (SE 0.011, n=153)	0.893 (SE 0.013, n=147)	−0.004 *p=0.82*	/
	QALY (EQ-VAS)	Overall	0.878 (SE 0.008, n=153)	0.879 (SE 0.008, n=147)	−0.001 *p=0.92*	/
De Lima (2022)	SF-36 [Physical health] *Per protocol (19;18)* *Intention-to-treat (23;26)*	Pre-CR	61.35 [95% CI: 52.32-70.38, n=19] 60.75 [95% CI: 52.08-69.41, n=23]	67.61 (58.33-76.89, n=18) 69.51 (61.36-77.66, n=26)	/	/
		6 months	67.55 [95% CI: 58.13-76.97, n=19] 66.55 [95% CI: 58.25-74.86, n=23]	71.28 (61.61-80.95, n=18) 73.31 (65.50-81.12, n=26)	Per protocol: *p=0.619* Intention-to-treat: *p=0.536*	/
	SF-36 [Mental health] *Per protocol (19;18)* *Intention-to-treat (23;26)*	Pre-CR	71.48 [95% CI: 63.63-79.33, n=19] 69.60 [95% CI: 61.72-77.47, n=23]	76.53 (68.46-84.59, n=18) 75.85 (68.45-83.26, n=26)	/	/
		6 months	78.85 95% CI: 71.39-86.30, n=19] 76.52 [95% CI: 69.20-83.84, n=23]	81.28 (73.62-88.93, n=18) 79.71 (72.82-86.60, n=26)	Per protocol: *p=0.583* Intention-to-treat *p=0.388*	/

(SIP: Sickness Impact Profile; EQ-5D: EuroQol quality of life questionnaire; SF-36: Short Form-36)

S9: Total cost and Common Cost Components

Cost components/Studies	Marchionni (2003)	Taylor (2007)	Jolly (2009)	Cowie (2014)	Whittaker (2014)	Kidholm (2016)	Frederix (2016)	Frederix (2017)	Kraal (2017)	Hwang (2019)	Maddison (2019)	Brouwers (2021)	De Lima (2022)
Price Year	2000 USD	2002/ 2003 GBP	2001/ 2002 GBP	2013/ 2014 GBP	2010* Australian dollars	2013/ 2014 Euro	2015 Euro	2015 Euro	2015 Euro (Dutch CPI)	2013 Australian dollars	2014 New Zealand dollars	2020 Euro (Dutch CPI)	2019 Brazilian Reais
Health care service perspective total cost	**$ 13,246 vs 21,298**	**£ 3,279 vs 3,201** *p=0.894*	**£ 198 vs 157** *p<0.05*	**£ 196.53 vs 221.58**	**$1,633 vs 1,845**	**€ 5,709 vs 4,045** *p=0.0211*	**€ 2,155,81 vs 2,720.21** *p=0.01*	**€ 3,262 vs 4,140**	**€ 2,419 vs 2,855** *p=0.392*	**Aus$ 2,325.09 vs 3,915.55**	**NZ$ 4,920 vs 9,535**	**€ 4,787 vs 5,507** *p=0.36*	**R$ 242.72 vs 552.73**
CR program cost	**$ 1,650 vs 8,841**	**£ 170 vs 200** *p<0.0001*	/	**£ 196.53 vs 221.58**	/	**€ 718$^{\Phi}$ vs 265$^{\Phi}$**	**€ 1,694.37$^{\Phi}$ vs1,525.50$^{\Phi}$**	**€ 1,696$^{\Phi}$ vs 1,526$^{\Phi}$**	**€ 314 vs 336** *p=0.128*	/	**NZ$ 1,130 vs 3,466**	/	**R$ 242.72 vs 552.73**
- *Staff*	/	£ 145 vs 187 *p<0.0001*	/	£ 23.58 vs 187.59$^{\Phi}$	$ 225 vs 225	€ 320 vs 210	€ 66.72 vs 0	€ 67 vs 0	/	Aus$ 1,123.03$^{\Phi}$ vs 1,809.79$^{\Phi}$	NZ$ 615.38 vs 583.04	€ 282 vs 310 *p=0.66*	R$ 33.10 vs 397.20
- *Equipment/facility/device*	/	£ 18 vs 12 *p<0.0001*	/	£ 34.99 vs 34.99	$ 120 vs 595	€ 243 vs 0	€ 39.95 vs 0	€ 40 vs 0	/	Aus$ 407.21$^{\Phi}$ vs 925.26$^{\Phi}$	NZ$ 200.00$^{\Phi}$ vs 1,305.65$^{\Phi}$	/	R$ 23.05 vs 4.09
- *Staff travel*	/	£ 8 vs 1 *p<0.0001*	/	/	/	€ 13 vs 0	/	/	/	Aus$ 87.92 vs 0	/	/	/
- *Communications/Web service*	/	/	/	/	$ 195 vs 125	/	€ 59.7 vs 0	€ 60 vs 0	/	/	/	/	R$ 43.41 vs 0
- *Technology development*		/	/	£ 136.56$^{\Phi}$ vs 0	$ 283 vs 40	/	/	/	/	/	/	/	/
Health care utilisation cost	**$ 11,596 vs 12,457**	**£ 3,279 vs 3,201** *p=0.894*	/	/	/	**€ 4,991 vs 3780** *p=0.936*	**€461.44 vs 1,194.71**	**€ 1,567$^{\Phi}$ vs 2,614$^{\Phi}$**	/	/	/	/	/
- *Hospital (re-)admissions*	/	£ 378 vs 202 *p=0.383*	*p>0.05*	£ 7,715.70$^{\Phi}$ vs 7,207,83$^{\Phi}$	/	€ 4,224 vs 3,002 *p=0.507*	€ 278.33$^{\Phi}$ vs 944.04$^{\Phi}$	€ 1,998$^{\Phi}$ vs 2,117$^{\Phi}$	€ 503 vs 692 *p=0.645*	Aus$ 546,77 vs 1,009.42	/	€ 711 vs 1,141 *p=0.10*	/
- *Revascularization*	/	£ 1,915 vs 1,539 *p=0.360*	/	/	/	/	/	/	/	/	/	/	/
- *Outpatient visits*	/	/	/	/	/	€ 533 vs 519 *p=0.815*	/	/	/	/	/	€ 1,320 vs 1,426 *p=0.79*	/
- *GP contacts*	/	£ 94 vs 104 *p=0.764*	*p>0.05*	/	/	€ 179 vs 66 *p=0.598*	/	/	€ 80 vs 114 *p=0.048*	/	/	€ 194 vs 218 *p=0.41*	/
- *Specialist visit*	/	/	/	/	/	/	€ 50,33$^{\Phi}$ vs 66,13$^{\Phi}$	€ 101 vs 137	€ 379 vs 537 *p=0.048*	/	/	/	/
- *Diagnostic tests*	/	£ 973 vs 778 *p=0.115*	/	/	/	/	€ 132,78$^{\Phi}$ vs 184,54$^{\Phi}$	€ 278 vs 360	/	/	/	/	/
- *Emergency*	/	/	/	/	/	€ 12 vs 24 *p=0.913*	/	/	/	/	/	€ 615 vs 723 *p=0.48*	/
- *Medication*	/	£ 267 vs 247	*p>0.05*	/	/	/	/	/	€ 624 vs 645	/	NZ$ 331 vs 605	€ 633 vs 667	/

		p=0.420							*p=0.817*		*p=0.02*	*p=0.72*	
Societal perspective total cost	/	/	**£ 807 vs 896** *p>0.05*	/	**$ 1,713 vs 2,245**	/	/	/	**$ 6,265 vs 9,425** *p=0.087*	/	/	**€ 20,495 vs 24,381** *p=0.34*	/
Cost of patient's travel to hospital	/	/	£ 609 vs 739	/	$80 vs 400	/	/	/	/	/	/	/	/
Absenteeism/absence from work	/	/	/	/	/	/	/	/	€ 3,289 vs 5,980 *p=0.117*	/	/	€ 2,711 vs 3319 *p=0.48*	/
Unpaid absenteeism/labour	/	/	/	/	/	/	/	/	€ 557 vs 589 *p=0.893*	/	/	€ 5,249 vs 7,802 *p=0.19*	/
Presenteeism	/	/	/	/	/	/	/	/	€ 5,507 vs 8,433 *p=0.152*	/	/	€ 2,379 vs 2,490 *p=0.87*	/
Informal care	/	/	/	/	/	/	/	/	/	/	/	€ 5,368 vs 5,263 *p=0.94*	/

*(The comparison is: ACRP vs CBCR; *: the authors did not report the price year, as the patients were enrolled between 2009 and 2011(Varnfield, 2014), we assumed 2010 as the reference year for cost conversion; Φ: calculated by the reviewers of this study based on reported values in the original article; § sum of paid and unpaid absenteeism; $: USD; £: GBP; €: Euro; Aus$: Australian dollars; NZ$: New Zealand dollar; R$: Brazilian Reais; CPI: consumer price index)*

S10: Summary of findings – cost and effectiveness

Author (year)	Country	Intervention vs. Control	Incremental costs[#]	Incremental effectiveness[#]	ICER	WTP	Reviewer's conclusion
Marchionni (2003)	Italy	Home-based CR vs. Hospital-based CR	Health care: - $8,052[Φ]	NR	NR	NR	*Health care service perspective:* ACRP has lower costs; similar effectiveness
Taylor (2007)	UK	Home-based CR vs. Hospital-based CR	Health care: £78 *p=0.894*	- 0.06 QALYs *p=0.156*	- £644/QALY	NR	*Health care service perspective:* Similar costs and effectiveness
Jolly (2009)	UK	Home-based CR vs. Centre-based CR	Health care: £41 *p<0.05* Societal: - £89 *p>0.05*	-0.016 *p>0.05*	NR	NR	*Health care service perspective:* ✕ ACRP has significantly higher costs; similar effectiveness *Societal perspective:* Similar costs and effectiveness.
Cowie (2014)	UK	Home-based CR vs. Hospital-based CR	Health care: - £25.05[Φ]	NR	NR	NR	*Health care service perspective:* Similar costs and effectiveness
Whittaker (2014)	Australia	Home-based telehealth CR vs. Centre-based CR	Health care: - $212[Φ] Societal: - $532[Φ]	0.08 EQ-5D[§] *p=0.01*	NR	NR	*Both perspectives:* ☑ Similar costs; ACRP is significantly more effective
Hwang (2019)	Australia	Home-based telerehabilitation vs. Centre-based CR in hospital	Health care: - Aus$1,590 *p<0.001*	0 QALYs	- Aus$4,157/QALY	$50,000 to $60,000/ QALY	*Health care service perspective:* ☑ ACRP has significantly lower costs; similar effectiveness
Kidholm (2016)	Denmark	Cardiac Telerehabilitation vs. Hospital or healthcare centre-based CR	Health care: €1,664[Φ] *p<0.05*	0.004 QALYs *p>0.05*	€518,280/QALY	NR	*Health care service perspective:* ✕ ACRP has significantly higher costs; similar effectiveness
Frederix (2016)	Belgium	Telerehabilitation combined with Centre-based CR vs. Centre-based CR	Health care: - €564.40 *p=0.01*	0.026 QALYs	- €21,707/QALY	NR	*Health care service perspective:* ☑ ACRP has significantly lower costs; similar effectiveness
Frederix (2017)	Belgium	Telerehabilitation combined with Centre-based CR vs. Centre-based CR	Health care: - €878	0.22 QALYs *p=0.005*	- €3,993/QALY	NR	*Health care service perspective:* ☑ ACRP has lower costs and is significantly more effective

Kraal (2017)	The Netherlands	Home-based CR vs. Centre-based CR	Health care: - €437 *p=0.392* Societal: - €3,160 *p=0.087* Incl. presenteeism: - €6,085 *p=0.070*	NR *p>0.05*	Presented in cost-effectiveness plane	€20,000 to €40,000/QALY	*Both perspectives:* Similar costs and effectiveness
Brouwers (2021)	The Netherlands	Cardiac Telerehabilitation vs. Centre-based CR	Health care: -€720 P=0.36 Incl. absenteeism:- €3,887 *p=0.34*	-0.004 QALYs *p=0.82*	Presented in cost-effectiveness plane	€215,000/ QALY; Disease severity–adjusted €20,000/QALY	*Both perspectives:* Similar costs and effectiveness
Maddison (2019)	New Zealand	Cardiac Telerehabilitation vs. Hospital-based CR	Health care: - NZ$4,615 *p>0.05*	-0.03 EQ-5D	NR	NR	*Health care service perspective:* Similar costs and effectiveness
De Lima (2022)	Brazil	Home-based Cardiac Telerehabilitation vs. Centre-based CR	Health care: - R$310.01[Φ]	NR *P>0.05*	NR	NR	*Health care service perspective:* Similar costs and effectiveness

(#: the difference between Intervention and Control - negative incremental costs or positive incremental effectiveness favours intervention; Φ: Nort reported in the original article, but calculated by the reviewers of this study; § Although the study period was 6 months, the last measurement of EQ-5D was at 6 week; NR: Not reported in the original article; WIP: Willingness to pay; $: USD; £: GBP; €: Euro; Aus$: Australian dollars; NZ$: New Zealand dollar; R$: Brazilian Reais.)