THE EFFECTS OF MAINTENANCE CARDIAC REHABILITATION: A SYSTEMATIC REVIEW AND META-ANALYSIS, WITH A FOCUS ON SEX

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Highlights:

- Maintenance CR results in significantly lower LDL and greater QoL than usual care.
- For other pooled outcomes, when compared to usual care, no significant differences were observed
- There were no differences when maintenance CR was compared to active comparison.
- Qualitatively, strength, medications, support, cognition, and depression were better.

ABSTRACT

Phase III/IV cardiac rehabilitation (CR) is recommended to promote maintenance of benefits achieved during Phase II; there has been no meta-analysis to test this to date. This study determined the effects of maintenance CR on any outcome, with consideration of sex. Seven databases were searched from inception-January 2020. Randomized controlled trials on the effects of maintenance CR in cardiovascular disease patients who had graduated from CR were included. Level of evidence was evaluated with GRADEPro. 819 citations were identified, with 10 trials (21 papers) included (5238 participants; 859 [16.4%] female). Maintenance CR resulted in lower low-density lipoprotein (mean difference [MD]=-0.58; 95% confidence interval [CI]=-1.06–-0.10, n=392) and greater quality of life (MD=0.28, 95% CI=0.05–0.52, n=118) when compared to usual care only. Outcomes for women and sex differences were mixed. In conclusion**,** maintenance programs appear to sustain patient's quality of life, but more focus on women's outcomes is needed.

Keywords: cardiac rehabilitation, secondary prevention, cardiovascular diseases, exercise, review, risk reduction

Abbreviations

CR: Cardiac rehabilitation; MD: mean difference; CI: confidence interval; QOL: Quality of life; CVD: Cardiovascular diseases; PRISMA: Preferred Reporting Items for Systematic Reviews and Meta-Analyses; AMSTAR: A Measurement Tool to Assess Systematic Reviews; RCT: Randomized controlled trials; MI: Myocardial infarction; CABG: Coronary artery bypass graft; PCI: Percutaneous coronary intervention; RoB: Risk-of-Bias; LDL-C: low-density lipoprotein cholesterol; HDL-C: High-density lipoprotein cholesterol; METs: Metabolic equivalent of tasks

Background

Cardiovascular diseases (CVD) are among the leading causes of death and disability globally.[1] This occurs despite the substantive evidence regarding how to control the disease, by means of interventional procedures, pharmacological approaches, and promotion of healthy lifestyles to control risk factors.[2]

Cardiac rehabilitation (CR) is a proven strategy for secondary and tertiary prevention.[3] Phase I programs are delivered in-hospital at the time of a cardiac event or procedure where available, and Phase II programs follow on an outpatient basis, generally for a few months,[4] to support patients in adopting healthy lifestyles. However, it is known that maintenance of health behavior changes required for optimal prevention decay substantively post-program,[5] and that women are significantly less likely to adhere[6] and maintain physical activity compared to men.[7]

Maintenance CR programs (variably terms phase III or IV depending on the country) were accordingly developed, to promote maintenance of the healthy lifestyle changes achieved in the previous phases, particularly exercise.[8] They are often offered in community settings, in the same clinical setting as the phase II program, or can be home-based. By maintaining exercise and risk factor control, physiological benefits should accrue, and hence patient health outcomes will be optimized.

However, there is little known about the impact of maintenance CR.[9] Only one systematic review has been published;[10] it was limited in that the search was for articles from 2000-2016, there was co-mingling of Phase II CR with maintenance as they focused on any CR <12 weeks, and there was no quantitative synthesis of findings. In view of the above, this study

aimed to review the effects of maintenance CR only, in any year, in patients with CVD, on any outcome, with meta-analysis for the first time and consideration of sex.

Methods

The protocol for this systematic review and meta-analysis was registered on PROSPERO (CRD42020167959; note focus on sex initiated after registration). Methods were based on the Cochrane Handbook.[11] It is reported in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement,[12] and incorporates the items outlined in the "A Measurement Tool to Assess Systematic Reviews" (AMSTAR) checklist.[13]

Inclusion/Exclusion Criteria

The only included study designs were randomized controlled trials (RCTs), and these were coded in terms of whether they had usual care control or active comparison arms (or both). The trial could have any outcome, given this is the first quantitative review in the area; however, primary outcomes of interest were mortality and morbidity, and secondary outcomes of interest were functional capacity, CV risk factors, psychosocial well-being and costs. Assessments had to be reported at end of Phase II and maintenance CR.

Adults (ages 18 years and over) with myocardial infarction (MI), angina, following coronary artery bypass graft (CABG) surgery, or percutaneous coronary intervention (PCI) were included. If other patient types were included in the sample (e.g., heart failure, peripheral vascular disease), they had to comprise less than 40% of the sample. Participants must have completed an outpatient (phase II) CR program of at least 6 weeks duration (supervised or unsupervised).

The maintenance CR program had to be of at least 6 months duration, and offer structured aerobic exercise (other forms of exercise were also acceptable, but programs must have some aerobic exercise prescribed, done supervised or unsupervised). Programs also had to offer continual, regular follow-up contacts with patients (e.g., monthly), with some in-person contact at least at the beginning.

Data Sources & Search Strategy

Seven electronic databases were searched from inception through to January 23, 2020: Medline, PubMed (non-Medline), Embase, Lilacs, PsycINFO, CINAHL (Cumulative Index to Nursing & Allied Health Literature), and Emcare (Ovid). An Information Specialist (MP) developed and performed the searches utilizing the PICO framework, valid subject headings as appropriate for each database, and free-text terms relevant to each topical concept. No date or language limits were applied. The full Medline search strategy as an example can be viewed in Appendix 1.

Two clinical trial registers were also searched, namely World Health Organization and Clinicaltrials.gov. For any completed trials identified for which a publication was not identified, the corresponding author was contacted with a request for the results (e.g, ECO-PCR trial).[14, 15] The reference list from the Sanchez-Delgado et al.[10] and Martinello et al.[16] (interventions to promote exercise maintenance post-CR) reviews were also perused for potential articles.

Study Selection

Duplicate citations from the searches were deleted in Mendeley, with the unique citations then imported into Covidence for screening. After training and calibration, two researchers (MC,

FAH) independently considered the abstracts of potentially-eligible articles, and resolved any disagreements between them. The same researchers then considered the full-texts of potential citations to ascertain whether they met eligibility criteria; any disagreements were resolved by a third party following discussion (SLG). Once the trials were identified, any related protocol manuscripts, theses/dissertations or publications on the baseline cohort were secured to inform data extraction and quality assessment.

Data Extraction

Using a slightly modified version of the Cochrane template, information regarding the sample, nature of the maintenance CR program (e.g., setting), and outcome results were extracted from the included trials (end of phase II and maintenance CR). The longest follow-up was extracted, and results based on intention-to-treat where available. In addition, the risk of bias in included trials was assessed using the Cochrane Risk-of-Bias Tool for Randomized Trials (RoB; version 1)[17] at both the study and outcome level. When information was missing, including sex dis-aggregated results, 2 attempts were made to contact the corresponding author by email.

Following training, data was extracted independently by one researcher (MC), and checked independently by a second (FAH); any disagreements were resolved with discussion with the senior author (SLG; except for the Reid et al. trial[14, 15] in which she was involved, to mitigate potential bias). One researcher entered values into RevMan[18] for meta-analyses (MC), which were checked by a second researcher independently (FAH).

Finally, as per Cochrane methodology,[11] evidence quality or certainty was rated with the GRADEPro tool, with regard to risk of bias, imprecision, inconsistency, indirectness, and publication bias,[19] by MC and checked by FAH; disagreements were resolved through

discussion with an independent, senior author (SLG).

Statistical Analyses

Synthesis and analysis of the results was qualitative and quantitative. The authors created an excel file with all outcomes (including units of measurement / assessment tools), to determine whether there were at least 2 trials for any given outcome measured consistently, where the same type of comparison arm existed (i.e., trials with usual care arms and/or active comparison arms were grouped separately); where this was met, meta-analysis was undertaken. Note lipid values were converted to mmol/l for consistency, and functional capacity measured with 6-minute walk test was converted to ml/kg/min to allow for meta-analysis.[20] Meta-regression was contemplated where sufficient trials were identified, with plans to investigate quality, setting and sex. For all other outcomes, synthesis of results was tabular and narrative only.

Where possible, meta-analyses were performed using RevMan 5.4, to compare the mean differences (MDs) and 95% confidence intervals (CIs) for continuous, and relative risk (RR) and 95% CI for binary outcomes, between intervention and control/comparison groups. For the 2 trials[21–25] that included more than 2 arms, both comparisons were included in the appropriate meta-analysis and the intervention group sample size was divided to include half in each meta-analysis as per the Cochrane handbook.[11] A random-effects meta-analysis was used for the overall analyses, and fixed-effects meta-analysis for the sex subgroup analyses, which provided an overall summary measure of effect.

For each meta-analysis, heterogeneity was measured using χ^2 and I^2 statistics. In case of substantial heterogeneity, we planned to investigate sources of heterogeneity such as clinical and

methodological variability using meta-regression where there were >10 trials,[11] however this was not met for any outcome.

Results

Overall, 819 citations were identified, of which 10 trials (21 publications) [14, 15, 21–39] that met the eligibility criteria were included (Figure 1). No trials were identified in any other language. Of the "other" sources searched, only the Reid et al. trial was included.[15] Upon contacting authors, data from 3 trials were available by sex[15, 26, 28]; for one trial, a sex-specific paper is forthcoming.[22]

Characteristics of Included Trials

Risk of bias for each included trial is shown in Supplemental Figure 1 and overall in Figure 2. In no trials were the participants or providers blinded, as this would not be methodologically possible given the nature of CR.

With regard to trial design (Table 1), seven trials (70%) had usual care comparison arms, one (10%) had an active comparison arm, and two (20.0%) had both (3-armed trials). In the Brubaker 2000 trial, the active comparison arm (i.e., centre-based group) was excluded because it was not randomized.[32] Longest follow-up duration ranged from 6 months – 4 years. All were parallel group RCTs, and none were cluster randomized.

Trials were performed in North America, Europe and Asia, between 2000 and the present year. Trial sample sizes ranged between 24 and 3241 patients (median=91; Table 1). The average age of the participants in the trials analyzed ranged between 55 and 65 years (median=62), and 859 (16.4%) trial participants were female (one trial did not report sex[32]). Two trials enrolled some (<11%) patients with heart failure, valvular heart disease/surgery and cardiomyopathy.[28,

32] For 1 (10.0%) trial, intention-to-treat analyses was performed for outcomes of interest[21–23]; note that for the Reid et al. trial,[15] overall results are reported using this principle, but the sex differences are reported per protocol.

With regard to the CR maintenance program setting (Table 1), four (40.0%) trials were hospital-based, one (10.0%) was home-based, two (20.0%) were hospital and home-based, one (10.0%) was in a medical setting outside a hospital, one (10.0%) was home-based and in a medical setting outside a hospital, and one (10.0%) was multi-center either in hospital or medical setting outside a hospital. One (10.0%) trial included virtual reality. The median duration of the CR maintenance programs was 11 months. Six (60.0%) were comprehensive.

Outcomes

Outcomes assessed were mortality, morbidity (e.g., major adverse cardiac events, CVD admissions and interventions), CVD risk score, adverse events, functional capacity (i.e., stress test, walk test) and strength (i.e., knee extension), medical risk factors (e.g., anthropometrics, blood pressure, lipids, glucose, c-reactive protein), lifestyle risk factors (e.g., exercise behavior [self-report and objectively-measured], tobacco use, diet, medication use), psychosocial well-being (e.g., quality of life, depression, anxiety, support, stress) and cognition. No trials reported on costs, although a cost analysis was planned for Reid et al. trial, but was not performed due to need for further research on the intervention (personal communication from authors).[14] Level of evidence for each is shown in Table 2a and 2b (by comparison).

Table 1 also qualitatively summarizes the findings of all trials for all outcomes. Some significant effects were observed for outcomes that could not be pooled in meta-analysis. Knee extension strength was significantly greater with maintenance CR than active comparison.[27]

Cardiac medication use increased significantly with maintenance CR, but did not with usual care.[26] Depressive symptoms were lower and social support higher with maintenance CR than usual care.[30] Cognition was greater and depressive symptoms lower with maintenance CR than both usual care or active control.[25] Left ventricular ejection fraction was greater with maintenance CR than usual care.[39] Significant differences were also found for physical activity, stress management and dietary habit in comparison to usual care.[37] No other effects were observed.

Among the 3 trials for which data were available by sex (Table 3), qualitatively (meta-analysis results summarized below), for women at post-test, waist circumference[28] and perceived stress[26] were worse in women after maintenance CR compared to usual care; one trial found BMI was better with maintenance CR compared to usual care in women, however there was lack of equivalence at baseline which likely explains this effect.[15] No other group differences in outcomes in women were observed. As for changes with maintenance CR in women, all changes were not favourable for women, were in men or were with usual care.

As for sex differences (Table 3), with usual care, functional capacity was significantly lower in women,[15] but there was no difference with maintenance CR.[15, 26, 28] With regard to blood pressure, it was lower for women than men in usual care and with maintenance CR.[28] With regard to lipids, total cholesterol was lower in men than women with maintenance CR,[26] while high-density lipoprotein (HDL) was higher in women than men with maintenance CR.[26] Anthropometrics were more favourable in women than men in usual care.[15] There were no sex differences at post-test for blood glucose or tobacco use.[26, 28] Finally, perceived stress was higher in women than men with maintenance CR.[26]

Meta-Analysis

All ten trials were included in the meta-analyses; all but one[27] was eligible for the meta-analyses with usual care comparisons, and 3 for the analyses with active comparison arms.[21–25, 27] Despite contacting the author, for some outcomes of the Sunamura et al. trial[21–23] there was no standard deviation, so we could not include those outcomes in the meta-analysis. A summary of findings is shown in Tables 2a and 2b (by comparison).

Comparisons to Usual Care

There were no significant effects of maintenance CR on major adverse cardiac events or functional capacity (Table 2a; Supplementary Figures 2-8). With regard to risk factors, There were no significant effects of maintenance CR on anthropometrics, blood pressure, glucose or tobacco use (Table 2a; Supplementary Figures 9-12, 18, 19). With regard to lipids, compared with usual care, the effects of maintenance CR in reducing low-density lipoprotein (LDL) were meaningful (5 trials; 5 comparisons; participants=392; MD= -0.58, 95% CI= -1.06 to -0.10; very low-quality evidence; Figure 3). Heterogeneity was high (I^2=95%). No significant differences were found for other lipid parameters (Supplemental Figures 14-17).

With regard to total quality of life (QoL), compared with usual care, the effects of maintenance CR in increasing total QoL were meaningful (10 trials; 2 comparisons; participants=118; MD=0.28, 95% CI=0.05 to 0.52; low-quality evidence; Figure 4). Heterogeneity was low. There were no significant effects of maintenance CR on QoL subscales (Table 2a; Supplementary Figures 20-22). Because of the number of included trials for each outcome, funnel plots could not be generated.

Comparisons to Active Controls

Meta-analysis could only be performed for exercise capacity (VO_2peak) and 3 QoL subscales. As expected, there was no significant difference between maintenance CR and active comparison (Supplemental Figures 23-26). The summary of findings and assessment of certainty is shown in Table 2b.

Sex Differences

The summary of subgroup analyses by sex is shown in Table 4. With regard to exercise capacity, measured as both VO_{2peak} and metabolic equivalent of tasks (METs; participants=377), results suggested that sex significantly modified the effect of maintenance CR compared to usual care; in women, the treatment effect favoured intervention, and in men it favoured usual care. There was an overall effect of maintenance CR on VO_{2peak} in men and in women, but not for METs.

With regard to risk factors, there were no sex effects for tobacco use, blood glucose, or blood pressure (Table 4). For anthropometrics, maintenance CR had an effect for men, but not women. With regard to lipids, maintenance CR had an effect for men on total cholesterol, LDL, and HDL. There was a sex difference for total cholesterol (in women, the treatment effect favoured usual care and in men it favoured intervention) and HDL (such that in women, the treatment effect favoured intervention and in men it favoured usual care).

Discussion

Phase II CR is key to ensuring patients achieve risk factor targets and adopt a healthy lifestyle, but this must be maintained for patient outcomes to be optimized. Results of this systematic review demonstrate there are few trials on maintenance CR (i.e., 10), and the interventions are quite heterogeneous in terms of setting, exercise prescription and

comprehensiveness; data on women's outcomes are scant, and the mixed findings render it difficult to understand the effects of maintenance CR in women. Beneficial effects of maintenance CR were observed for QoL and lipids, but were not seen for mortality and morbidity (where there were only 2 trials), nor functional capacity, blood pressure or body composition.

Results of this review demonstrate more trials are needed with mortality and morbidity as well as tobacco cessation for example as outcomes (only 2 in most cases). The meta-analyses for most outcomes demonstrated no effect when compared to usual care, with the blood pressure results and those for some other lipid parameters looking promising however. This is likely due to the fact that patients who access and complete phase II CR have much improved control of their risk factors, and so there is not much room to further improve; we did wonder however whether maintenance CR would at least prevent decay that would occur with usual care; the findings suggest it is likely however that patients who complete phase II CR have been successfully encouraged to maintain a health-promoting lifestyle and their medication is optimized, or that usual care in these countries is high-quality (i.e., follow-up with primary care to monitor risk factors and encourage heart-healthy behaviors).

Implications

This review raises questions about availability of, and recommendations for, maintenance CR. Of the minority of patients that access and complete phase II CR, it is not known how many then would get referred and access a maintenance program, but it would be much fewer. Only just over half of countries in the world even have phase II CR, and they do not have sufficient capacity for all patients in need.[40] A recent survey of CR programs globally identified that 60% of programs that do exist have maintenance programs available, but how much capacity is

not known.[41] Indeed, maintenance programs are generally voluntary, and programs often do not have the resources to support them, as they do not even have enough resources to offer phase II CR to all indicated patients. It is also unknown how they are funded, but generally patients pay-out-pocket to our understanding, and hence whether they are affordable for patients to use over a long period of time is questionable.[42] Thus, we cannot be advocating it for all patients, as many would not have the financial means to participate. Usually governments or health insurance companies will reimburse phase II services,[42] but not maintenance programs, so programs do not have a revenue stream to deliver it. Some CR programs may offer maintenance programs as a source of revenue to support their phase II service provision.

For some countries, their phase II CR programs are so short,[43] that patients likely need a maintenance program to meet all risk factor targets and be in the position to self-manage and maintain exercise independently.[44] As a CR community, perhaps we need to consider what overall "dose" of CR patients need, and ensure all indicated patients receive that, and it is fully reimbursed, rather than the current model where advantaged patients access much CR, and those who need it most, none.

Caution is warranted in interpreting these results. First, the search strategy was not peer-reviewed. Second, with regard to the methodological quality of included trials, all had major bias due to the fact that in CR trials it is not possible to mask the patients or providers to randomization/intervention. Moreover, level of certainty was low for most outcomes. Third, for some meta-analyses, heterogeneity was very high, but there were insufficient trials to perform subgroup analyses or meta-regression to understand the drivers of the heterogeneity. Fourth, for many outcomes, meta-analysis could not be performed due to insufficient data for pooling; thus, results for these outcomes were solely narratively synthesized. This introduces bias, particularly

considering it was difficult to draw conclusions where sample sizes were small, as lack of significant effects may have been due to insufficient power. Fifth, given only a small proportion of eligible patients access maintenance CR, results would not be generalizable to all CVD patients, particularly those who are not adherent to healthy lifestyle recommendations.

Sixth, it is difficult to situate our findings in relation to previous literature, given our inclusion/exclusion criteria were more narrow than the only other review in this area; [10] it included 26 trials of long-term CR, of which only 3 true maintenance trials were included in our 10 herein.[26, 28, 39] Nevertheless, our conclusions were primarily consistent. Finally, presence and degree of publication bias is unknown.

Conclusion

Participation in maintenance CR results in increased QoL and better lipids when compared to usual care. There are not many trials in this area, but given the null effects for many outcomes, results raise questions about whether we should be augmenting maintenance CR capacity and encouraging patients to attend when often they must pay out-of-pocket. It is known phase II CR is highly effective, so efforts should certainly be made to ensure all patients (including women) at least access those services, with a sufficient dose to reduce mortality and morbidity. By ensuring all indicated patients receive the mínimum needed amount of CR, at no cost, the CR community will have a major impact on society.

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Figure Legends

Figure 1: PRISMA Flow Diagram

Figure 2: Risk of Bias in Across Trials Included in Meta-Analyses

Figure 3: Forest plot summarizing effect of maintenance CR versus usual care on LDL

Figure 4: Forest plot summarizing effect of maintenance CR versus usual care on quality of life - total

Figure 2

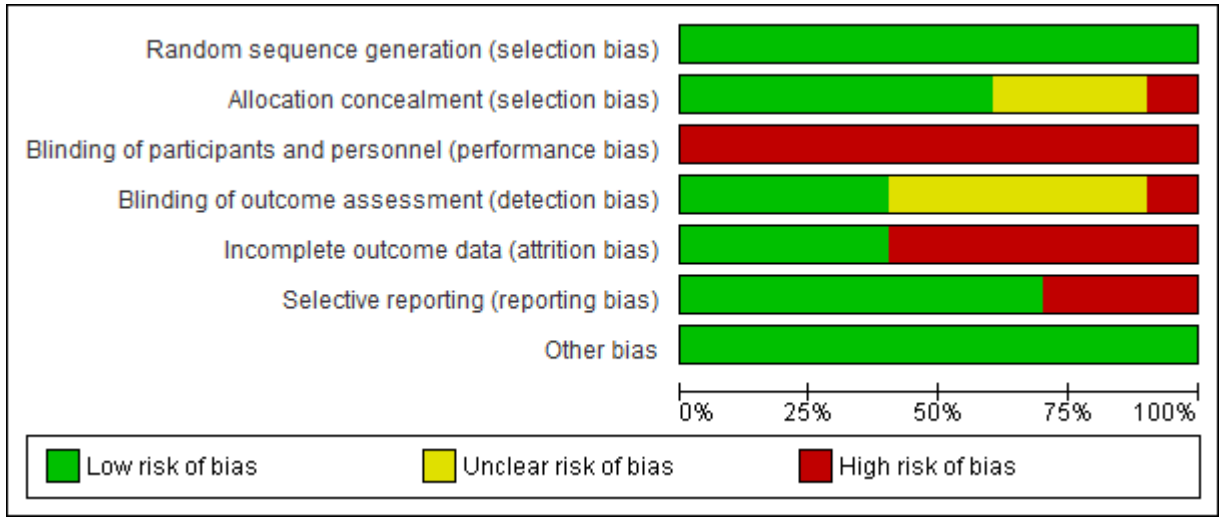

Random sequence generation (selection bias)
Allocation concealment (selection bias)
Blinding of participants and personnel (performance bias)
Blinding of outcome assessment (detection bias)
Incomplete outcome data (attrition bias)
Selective reporting (reporting bias)
Other bias
0%
25%
50%
75%
100%
Low risk of bias
Unclear risk of bias
High risk of bias

Figure 3:

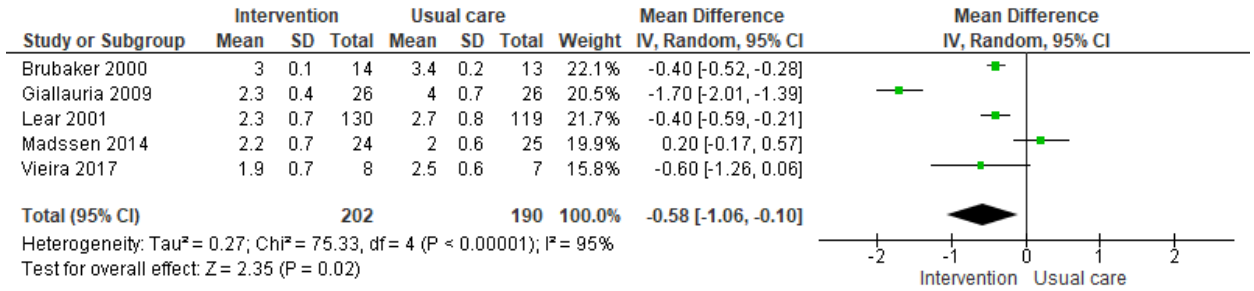

Intervention
Usual care
Mean Difference
Mean Difference
Study or Subgroup Mean SD Total Mean SD Total Weight IV, Random, 95% CI
IV, Random, 95% CI
Brubaker 2000 3 0.1 14 3.4 0.2 13 22.1% -0.40 [-0.52, -0.28]
Giallauria 2009 2.3 0.4 26 4 0.7 26 20.5% -1.70 [-2.01, -1.39]
Lear 2001 2.3 0.7 130 2.7 0.8 119 21.7% -0.40 [-0.59, -0.21]
Madssen 2014 2.2 0.7 24 2 0.6 25 19.9% 0.20 [-0.17, 0.57]
Vieira 2017 1.9 0.7 8 2.5 0.6 7 15.8% -0.60 [-1.26, 0.06]
Total (95% CI) 202 190 100.0% -0.58 [-1.06, -0.10]
Heterogeneity: Tau² = 0.27; Chi² = 75.33, df = 4 (P < 0.00001); I² = 95%
Test for overall effect: Z = 2.35 (P = 0.02)
-2
-1
0
1
2
Intervention
Usual care

Figure 4:

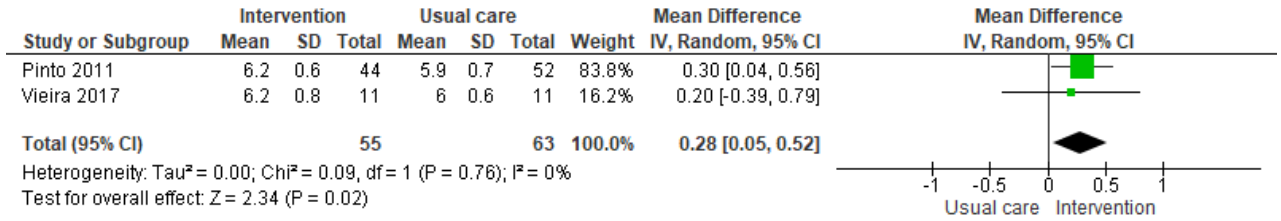

Intervention
Usual care
Mean Difference
Mean Difference
Study or Subgroup Mean SD Total Mean SD Total Weight IV, Random, 95% CI
IV, Random, 95% CI
Pinto 2011 6.2 0.6 44 5.9 0.7 52 83.8% 0.30 [0.04, 0.56]
Vieira 2017 6.2 0.8 11 6 0.6 11 16.2% 0.20 [-0.39, 0.79]
Total (95% CI) 55 63 100.0% 0.28 [0.05, 0.52]
Heterogeneity: Tau² = 0.00; Chi² = 0.09, df = 1 (P = 0.76); I² = 0%
Test for overall effect: Z = 2.34 (P = 0.02)
-1
-0.5
0
0.5
1
Usual care
Intervention

Table 1: Summary of all included trials, N=10

Study Author, Year, Country	**Sample (Size; Mean Age; Proportion female; Proportion non-CAD participants)**	**Arms**		**Results** Outcome, unit of measurement, adjustment, duration of follow-up
		Control Usual care and / or Comparison	**Experimental** (Duration; contact frequency; setting; Ex Rx [FITT]; comprehensive; any tech: y/n)	
Brubaker et al., 2000, USA	N=31 (intx=16, control=15); Age: intx=61 ± 11 yrs, control=59 ± 14 yrs; % Female: NR; Non CAD: congestive heart failure (6.5%), valvular heart disease/surgery patients (3.2%)	Usual care control: y Comparison: n (excluded as not randomized)	9 months; every other week; supervised and unsupervised; 3 to 5 times per week, exercise in their target heart rate range (50-75% of the heart rate reserve from exercise test performed at 3 months), 30 to 40 minutes, aerobic exercise (option of selecting the mode of endurance activity most appropriate for their situation [i.e., treadmill, stationary cycling, walking, etc]); comprehensive: y (education, review of changes in medical status and compliance, general support); tech: n	Exercise capacity (METS), adjusted (9 months) pre-intx 8.0±2.3; post-intx 9.2±0.4; pre-control 8.4±3.0; post-control 8.8±0.4. Significant differences within groups (P<0.05). No significant difference between groups. % body fat, adjusted (9 months) pre-intx 21±6; post-intx 21±1; pre-control 22±4; post-control 22±1. No significant differences within groups or between groups. Total cholesterol (mmol/L), adjusted (9 months) pre-intx 4.94±0.80; post-intx 4.91±0.16; pre-control 4.94±0.96; post-control 5.20±0.16. No significant differences within groups or between groups. HDL (mmol/L), adjusted (9 months) pre-intx 0.96±0.23; post-intx 1.14±0.03; pre-control 1.03±0.36; post-control 1.16±0.05. Significant differences within groups (P<0.05). No significant difference between groups. TC/HDL (ratio), adjusted (9 months) pre-intx 5.16; post-intx 4.32; pre-control 4.77; post-control 4.47. No significant differences within groups or between groups. LDL, (mmol/L), adjusted (9 months) pre-intx 3.18±0.72; post-intx 3.00±0.13; pre-control 3.10±0.80; post-control 3.41±0.16. No significant differences within groups or between groups. Triglyceride (mmol/L), adjusted (9 months) pre-intx 1.87±0.87; post-intx 1.75±0.14; pre-control 1.48±0.89; post-control 1.33±0.15. No significant differences within groups or between groups.
Giallauria et al., 2009, Italy	N=52 (intx=26, control=26); Age: intx=58.2 ± 7.8 yrs, control=57.4 ± 9.7 yrs; Female: intx=15.4%, control=15.4%; Non CAD: none	Usual care control: y Comparison: n	21 months; monthly, supervised; monthly sessions with the target of 60–70% of the VO2peak achieved at the initial symptom-limited exercise test, 30 minutes with 5-minute warm-up and followed by a 5-minute cool-down, aerobic exercise with bicycle ergometer; comprehensive: y (education and lifestyle behavior; tech: n	VO2peak (ml/kg per min), (21 months) pre-intx 20.5 ±2.4 ; post-intx 21.6±2.3; pre-control 20.9±1.1; post-control 15.4±2.0. Significant differences within groups (P<0.001, <0.001) and between groups. (P<0.001). VO2AT (ml/kg per min) (21 months) pre-intx 13.5±3.1; post-intx 13.9±2.2; pre-control 13.3 ±3.4; post-control 9.8±2.7. Significant differences within usual care group (P <0.001) and between groups (P<0.001). No significant difference within intervention group. VE/VCO2slope (21 months) pre-intx 35.2±3.3; post-intx 29.3±4.2; pre-control 34.9±4.5; post-control 39.8±4.9. Significant differences within groups (P<0.001, <0.001) and between groups (P<0.001). $Watt_{max}$(W) (21 months)

				pre-intx 132.0±6.8; post-intx 128.9±5.3 ; pre-control 131.6±9.0; post-control 94.5±3.0. Significant differences within groups (P<0.05, <0.001) and between groups (P<0.001). BMI (kg/m^2) (21 months) pre-intx 27.2±2.3; post-intx 26.7±2.5; pre-control 27.4±2.2; post-control 28.3±2.9. Significant differences within groups (P<0.05, <0.05) and between groups (P<0.001). SBP (mmHg) (21 months) pre-intx 127.2±4.5; post-intx 120±4.0; pre-control 128.7±5.9; post-control 130.6±2.9. Significant differences within intervention group (P <0.001) and between groups (P<0.001). No significant difference within usual care group. DBP (mmHg), (21 months) pre-intx 75.6±2.2; post-intx 74.3±2.1; pre-control 75.9±4.5; post-control 77.6±3.9. Significant differences within intervention group (P <0.05) and between groups (P<0.05). No significant difference within usual care group. Total Cholesterol (mmol/L), (21 months) pre-intx 4.7±1.1; post-intx 4.6±0.8; pre-control 4.6±0.8; post-control 5.7±0.6. Significant differences within groups (P<0.05, <0.05) and between groups (P<0.001). LDL-C (mmol/L), (21 months) pre-intx 2.8±1.1; post-intx 2.3±0.1; pre-control 2.8±0.8; post-control 4.0±0.7. Significant differences within groups (P<0.05, <0.001) and between groups (P<0.001). HDL-C (mmol/L) (21 months) pre-intx 1.3±0.2; post-intx 1.3±0.1; pre-control 1.2±0.1; post-control 0.9±0.1. Significant differences within usual care group (P <0.001) and between groups (P<0.001). No significant difference within intervention group. Triglycerides (mmol/L) (21 months) pre-intx 1.4±0.4; post-intx 1.4±0.3; pre-control 1.4±0.3; post-control 1.9±0.3. Significant differences within usual care group (P <0.001) and between groups (P<0.001). No significant difference within intervention group. HR (beats/min) (21 months) pre-intx 72.0±3.9; post-intx 68.0±3.3; pre-control 73.0±2.7; post-control 73.3±3.3. Significant differences within intervention group (P <0.001) and between groups (P<0.001). No significant difference within usual care group. LVEF (21 months) pre-intx 47.2±3.1; post-intx 47.1±3.4; pre-control 46.7±2.5; post-control 45.1±2.3. Significant differences within usual care group (P <0.05) and between groups (P<0.05). No significant difference within intervention group.
Giannuzzi et al., 2005, Italy	N=52 (intx=1620, control=1621); Age: intx=57.8 ± 9.1 yrs, control=58.0 ± 9.3 yrs; Female: intx=14.1%, control=13.3%; Non CAD: none	Usual care control: y Comparison: n	36 months; monthly from month 1 to month 6, then every 6 months for 3 years; supervised; at least 3 h/wk, 60% to 75% of the mean maximum heart rate, 30 minutes, aerobic exercise; comprehensive: y (lifestyle and risk	Total mortality (36 months) post-intx 34; post-control 43. No significant between group difference (P=0.29). CV mortality (36 months) post-intx 18; post-control 24. No significant between group difference (P=0.35). Sudden death (36 months) post-intx 10; post-control 16. No significant between group difference (P=0.24). CV mortality, MI and stroke (36 months) post-intx 52; post-control 77 . Significant between group difference (P=0.02). Cardiac death and non-fatal MI (36 months) post-intx 41; post-control 64. Significant between group (P=0.02).

			factor counseling lasting at least 1 hour, and reinforcement of preventive interventions lasting approximately 30 minutes); tech: n	Overall events (36 months) post-intx 261; post-control 295. Not ignificant between group (P=0.12). Nonfatal MI (36 months) post-intx 23; post-control 44. Significant between group (P=0.01). Nonfatal stroke (36 months) post-intx 11; post-control 13. Not significant between group (P=0.67). PCI (36 months) post-intx 144; post-control 159. Not significant between group (P=0.39). CABG (36 months) Post-intx 45; post-control 50. Not significant between group (P=0.6). Hospitalization for HF (36 months) post-intx 24; post-control 33. Not significant between group (P=0.22). Hospitalization for AP (36 months) post-intx 80; post-control 91. Not significant between group (P=0.39). Fatal and Nonfatal Stroke (36 months) post-intx 11; post-control 16. Not significant between group (P=0.33). BMI (kg/m^2) (6 months) pre-intx 26.5±3.5; post-intx 26.6±3.5; pre-control 26.6±3.6; post-control 26.8±3.5. Not significant between group (P=0.17). However, there was a 0.2% lower increase in BMI in the intervention group (P=0.17). During the course of the study, BMI increased by 1.7% and 2.1% in the intervention and usual care groups, respectively, a difference that was statistically significant (0.4%; P=0.03). Physical activity (score) (6 months) pre-intx 6.7±2.5; post-intx 7.5±2.2; pre-control 6.6±2.4; post-control 7.1±2.3. Significant between group (P=0.005). Tobacco use (n, %) (6 months) pre-intx 688 (42.5%); post-intx 137 (19.8%) ; pre-control 692 (42.7%); post-control 173 (24.9%). Significant difference between groups (P=0.02). Self/Stress management (score) (6 months) pre-intx 16.3±3.8 ; post-intx 14.0±3.4; pre-control 16.2±3.8; post-control 14.5±3.6. Significant between group (P<0.001). Dietary habits (score) (6 months) pre-intx 16.6±2.8; post-intx 19.1±2.2; pre-control 16.6±2.7; post-control 18.6±2.3. Significant difference between groups (P<0.001).
Izawa et al. 2006, Japan	N=24 (intx=12, comparison=12); Age: intx=65.2 ± 9.7 yrs, comparison=66.8 ± 9.9 yrs; Female: intx=10%, comparison=12.5%; Non CAD: none	Usual care control: n Comparison: y Duration: 6 months, twice weekly, aerobic exercise program comprised of walking at least twice weekly for 1 hour; comprehensive: n, tech: n	6 months; twice weekly; unsupervised; intx: at least twice/week, a rating of 11-13 on the 20-scale Borg scale of perceived exertion for aerobic exercise, low-intensity muscle strength training, 1 hour, combination of walking as aerobic exercise and resistance training; comprehensive: n; tech: n	Physical activity (steps) (6 months) pre-intx 10458.7±2210.1; post-intx 9945.7±2812.7; pre-control (1) 9622.4±2582.6; post-control (1) 9812.3±2652.3. No significant difference within group and between group (P=0.09). Peak VO_2 (ml/kg/min) (6 months) pre-intx 30.2±7.8; post-intx 30.8±6.6; pre-control (1) 27.4±6.6; post-control (1) 25.9±5.9. No significant difference within group and between group (P=0.08). Knee extension strength (Nm/kg) (6 months) pre-intx 1.8±0.4; post-intx 2.1±0.4; pre-control (1) 1.9±0.3; post-control (1) 1.6±0.3. Significant difference (P < 0.05) was seen between groups.
Lear et al. 2006, Canada	N=302, (intx=151, control=151); Age:	Usual care control: y Comparison: n	48 months; First year: 6 supervised CR sessions,	Exercise capacity (METs) (48 months)

	intx=64.8 ± 8.8 yrs, control=63.4 ± 10.2 yrs; Female: intx=17%, control=18%; Non CAD: none		6 telephones follow-ups, 3 lifestyle and risk factor counselling sessions. Second year: 4 telephone follow-ups, 2 lifestyle and risk factor counselling sessions. Third year: 4 telephone follow-ups, 2 lifestyle and risk factor counselling sessions. Fourth year: 4 telephone follow-ups, 2 lifestyle and risk factor counselling sessions. Supervised and unsupervised; frequency as above, each session consists of a warm-up, a medically prescribed target heart rate and a cool down period, 75 minutes, aerobic exercise; comprehensive: y (lifestyle & risk factor counselling); tech: telephone	pre-intx 10.4±2.4; post-intx 9.8±2.7; pre-control 10.4±2.4; post-control 9.8±2.6. Significant differences within groups (P <0.01). No significant difference between groups (P=0.765). Physical activity (kcal/wk) (48 months) pre-intx 2907±1812; post-intx 2099±2074; pre-control 3009±2204; post-control 2349±2018. Significant differences within groups (P <0.001). No significant difference between groups (P=0.574). Framingham Risk score (score) (48 months) Pre-intx 6.50 ±3.11; post-intx 5.90±2.88; pre-control 6.45±3.10; post-control 6.46±2.86. Significant differences within intervention group (P <0.05). No significant difference within usual care group or between groups (P=0.81). BMI (kg/m^2) (48 months) pre-intx 28.0±4.3; post-intx 28.3±5.0; pre-control 26.7±3.6; post-control 27.1±3.8. Significant differences within usual care groups (P <0.01). No significant difference within intervention groups or between groups (P=0.482). Waist Circumference (cm) (48 months) pre-intx 95.3±12.8; post-intx 96.9±14.7; pre-control 91.3±10.7; post-control 93.9±11.5. Significant differences within intervention and usual care groups (P <0.05, <0.01). No significant difference between groups (P=0.237). Total Cholesterol (mmol/L) (48 months) pre-intx 4.43±;0.87 post-intx 4.21±0.84; pre-control 4.54±0.89; post-control 4.54±0.95. Significant differences within intervention groups (P <0.05). No significant difference within usual care group or between groups (P=0.051). LDL-C (mmol/L) (48 months) pre-intx 2.49±0.73; post-intx 2.34±0.68; pre-control 2.66±0.71; post-control 2.67±0.79. Significant differences within intervention groups (P <0.05). No significant difference within usual care group or between groups (P=0.093). HDL-C (mmol/L) (48 months) pre-intx 1.13±0.31; post-intx 1.16±0.33; pre-control 1.16±0.28; post-control 1.20±0.33. Significant differences within usual care groups (P <0.05). No significant difference within intervention group or between groups (P=0.418). Triglycerides (mmol/L) (48 months) pre-intx 1.75±0.95; post-intx 1.60±1.53; pre-control 1.57±0.76; post-control 1.47±0.82. No significant difference within groups or between groups (P=0.748). TC/HDL-C (48 months) pre-intx 4.12±1.16; post-intx 3.82±1.10; pre-control 4.08±1.01; post-control 3.97±1.07. Significant differences within intervention group (P <0.001). No significant difference within usual care group or between groups (P=0.157). Glucose (mmol/L) (48 months) pre-intx 5.7±1.1; post-intx 5.8±1.2; pre-control 5.8±1.9; post-control 5.7±1.2. No significant difference within groups or between groups (P=0.239). SBP (mm Hg) (48 months) pre-intx 128±21; post-intx 126±18; pre-control 125±20; post-control 131±19. Significant differences within usual care groups (P <0.01) and between groups (P=0.005). No significant difference within intervention group. DBP (mm Hg) (48 months) pre-intx 72±11; post-intx 74±10; pre-control 72±10; post-control 77±11. Significant differences within intervention and usual care groups (P <0.05, <0.001). No significant difference between groups (P=0.103).

				Tobacco use (current) (48 months) pre-intx 2; post-intx 1 ; pre-control 4; post-control 5. No significant difference within groups or between groups. Dietary fat (% daily kcal)- Total (48 months) pre-intx 22.0±6.5; post-intx 25.2±7.08; pre-control 21.6±7.7; post-control 24.9±7.2. Significant differences within usual care groups (P <0.001). No significant difference within intervention group. or between groups (P=0.989). Dietary fat (% daily kcal)- Saturated (48 months) pre-intx 6.3±2.4; post-intx 8.2±3.6; pre-control 6.0±2.5; post-control 7.7±3.3. Significant differences within intervention and usual care groups (P <0.001, <0.001). No significant difference between groups (P=0.632). Dietary fat (% daily kcal)- Unsaturated (48 months) pre-intx 13.0±4.3; post-intx 14.1±4.5; pre-control 12.6±4.7; post-control 14.0±4.3. Significant differences within intervention and usual care groups (P <0.05, <0.01). No significant difference between groups (P=0.589). Perceived stress (48 months) pre-intx 33±7; post-intx 32±8; pre-control 33±8; post-control 32±8. No significant difference within groups. or between groups (P=0.840). Illness intrusiveness (48 months) pre-intx 29±13; post-intx 27±13; pre-control 30±14; post-control 27±13. Significant differences within usual care groups (P <0.05). No significant difference within intervention group. or between groups (P=0.494). Self efficacy (48 months) pre-intx 43±4; post-intx 42±4; pre-control 42±5; post-control 42±5. No significant difference within groups. or between groups (P=0.885). Exercise self-efficacy (48 months) pre-intx 68±10; post-intx 63±14; pre-control 66±13; post-control 62±15. Significant differences within intervention and usual care groups (P <0.001, <0.01). No significant difference between groups (P=0.457). Lipid-lowering medication (n, % yes) (48 months) pre-intx 112 (86.2%) ; post-intx 115 (88.5%); pre-control 98 (82.4%); post-control 95 (79.8%). No significant difference within groups. HMG-CoA reductase inhibitor (n, %) (48 months) pre-intx 102 (78.5%); post-intx 110 (84.5%); pre-control 88 (73.9%); post-control 89 (74.8%). No significant difference within groups. β-blocker (n, %) (48 months) pre-intx 88 (67.7%); post-intx 89 (68.5%); pre-control 82 (68.9%); post-control 76 (63.9%). No significant difference within groups. ACE-inhibitor (n, %) (48 months) pre-intx 59 (45.4%) ; post-intx 68 (52.3%); pre-control 49 (41.2%); post-control 58 (48.7%). No significant difference within groups. Calcium-channel blocker (n, %) (48 months) pre-intx 35 (26.9%); post-intx 36 (27.7%); pre-control 23 (19.3%); post-control 29 (24.4%). No significant difference within groups. Diuretic (n, %) (48 months)

				pre-intx 21(16.2%); post-intx 36 (27.7%); pre-control 13 (10.9%); post-control 21 (17.6%). Significant difference within intervention groups (P<0.01). No significant difference within usual care groups. ASA (n, %) (48 months) pre-intx 112 (86.2%); post-intx 102 (78.5%); pre-control 100 (84%); post-control 99 (83.2%). Significant difference within intervention groups (P<0.01). No significant difference within usual care groups. Hypoglycemic agents (n, %) (48 months) pre-intx 16 (12.3%); post-intx 22 (16.9%); pre-control 18 (15.1%); post-control 21 (17.7%). No significant difference within groups. Angiotensin receptor blocker (n, %) (48 months) pre-intx 4 (3.1%); post-intx 15 (11.5%) ; pre-control 4 (3.4%); post-control 10 (8.4%). Significant difference within intervention group (P<0.01). No significant difference within usual care group.
Madssen et al. 2014, Norway	N=49 (intx=24, control =25); Age: intx=64.4 yrs, control=58.5 yrs; Female: intx=25%, control=28%; Non CAD: valve replacement (6.1%), cardiomyopathy (4.1%)	Usual care control: y Comparison: n	12 months; monthly; supervised; three sessions of HIIT per week, and monthly supervised exercise session at the hospital, target heart rate was 85–95% of the maximum heart rate and 70% of maximum heart rate in the active pauses, 8–10 minutes of warmup followed by four times four minutes intervals, with an active pause of three minutes in-between intervals and at the end (walked or ran on treadmills), aerobic exercise with HIIT; comprehensive: n; tech: n	VO_{2peak} (ml/kg/min) (12 months) pre-intx 27.9±4.7; post-intx 28.8±5.6; pre-control 32.8±6.2; post-control 32.8±5.8. No significant difference within groups. or between groups (P=0.58). VO_{2peak} (ml/min) (12 months) pre-intx 2405±517; post-intx 2533±576; pre-control 2535±760; post-control 2614±734. No significant difference within groups or between groups (P=0.70). RER_{peak} (12 months) pre-intx 1.09±0.07; post-intx 1.09±0.09; pre-control 1.10±0.07; post-control 1.09±0.06. No significant difference within groups or between groups (P=0.71). BMI (kg/m^2) (12 months) pre-intx 28.0±3.9; post-intx 28.7±4.1; pre-control 25.8±3.3; post-control 26.1±3.2. Significant differences within intervention groups (P <0.05). No significant difference within usual care group or between groups (P=0.16). Waist Circumference (cm) (12 months) pre-intx 101.4±12.1; post-intx 103.2±11.7; pre-control 93.0±9.4; post-control 93.0±9.4. Significant differences within intervention groups (P <0.05) and between groups (P=0.04). No significant difference within usual care group. SBP (mmHg) (12 months) pre-intx 132.8±14.7; post-intx 133.7±16.4; pre-control 131.3±14.5; post-control 134.3±14.0. No significant difference within groups or between groups (P=0.69). DBP (mmHg) (12 months) pre-intx 78.8±7.2; post-intx 79.3±7.5; pre-control 75.1±10.7; post-control 77.5±10.0. No significant difference within groups or between groups (P=0.97). Heart rate recovery (beats) (12 months) pre-intx 27.7±11.2; post-intx 31.2±14.6; pre-control 28.9±10.0; post-control 30.1±10.2. No significant difference within groups or between groups (P=0.60). Resting Heart rate (beats/min) (12 months) pre-intx 64.0±10.2; post-intx 65.7±11.6; pre-control 61.2±11.5; post-control 63.2±11.1. No significant difference within groups or between groups (P=0.92). TC (mmol/L) (12 months) pre-intx 4.3±1.0; post-intx 4.3±0.8; pre-control 3.9±0.6; post-control 3.9±0.8. No significant difference within groups or between groups (P=0.57). LDL-C (mmol/L) (12 months) pre-intx 2.2±0.9; post-intx 2.2±0.7; pre-control 2.0±0.5; post-control 2.0±0.6. No significant difference within groups or between groups (P=0.70).

				HDL- C (mmol/L) (12 months) pre-intx 1.5±0.4; post-intx 1.5±0.4; pre-control 1.3±0.4; post-control 1.3±0.4. No significant difference within groups or between groups (P=0.34). Triglycerides (mmol/L) (12 months) pre-intx 1.4±0.8; post-intx 1.2±0.7; pre-control 1.2±0.6; post-control 1.3±1.1. No significant difference within groups or between groups (P=0.24). Glucose (mmol/L) (12 months) pre-intx 6.7±3.7; post-intx 6.4±2.2; pre-control 6.0±1.8; post-control 6.2±2.4. No significant difference within groups or between groups (P=0.43). HbA1c (%) (12 months) pre-intx 6.1±1.2; post-intx 6.0±1.0; pre-control 6.1±0.7; post-control 6.2±1.4. Significant differences within intervention group (P <0.05). No significant difference within usual care groups or between groups (P=0.21). hsCRP (mg/L) (12 months) pre-intx 1.09±0.9; post-intx 1.07±0.6; pre-control 1.2±0.9; post-control 1.5±2.5. No significant difference within groups or between groups (P=0.51). QOL- Emotional domain (MacNew) (12 months) pre-intx 6.0±0.8; post-intx 6.0±0.6; pre-control 5.7±0.8; post-control 6.1±0.8. No significant difference within groups or between groups (P=0.69). QOL- Physical domain (MacNew) (12 months) pre-intx 6.2±0.7; post-intx 6.3±0.6; pre-control 6.3±0.6; post-control 6.4±0.5. No significant difference within groups or between groups (P=0.40). QOL- Social domain (MacNew) (12 months) pre-intx 6.4±0.6; post-intx 6.5±0.4; pre-control 6.4±0.6; post-control 6.7±0.4. No significant difference within groups or between groups (P=0.37).
Pinto et al., 2011, USA	N=130 (intx=64, control =66); Age: intx=62.9 ± 9.3 yrs, control=54.3 ± 10.0 yrs; Female: intx=21.9%, control=19.7%; Non CAD: none	Usual care control: y Comparison: n	6 months; weekly over the first 2 months, bi-weekly for the next 2 months, and monthly for the last 2 months; unsupervised; 3 times/week, at least moderate-intensity exercise, about 90 minutes/session, aerobic exercise, comprehensive: motivational counselling; tech: telephone	QOL-Total (MacNew) (12 months) pre-intx 5.9±0.8; post-intx 6.2±0.6; pre-control 5.9±0.8; post-control 5.9±0.7. Significant difference between groups (P=0.002). QoL-Mental (SF-36) (12 months) pre-intx 53.9±7.8; post-intx 54.4±7.0; pre-control 53.7±8.8; post-control 52.4±10.4. No significant difference between groups (P=0.09). Cardiac Depression (scale) (12 months) pre-intx 65.4±22.3; post-intx 65.1±18.9; pre-control 68.0±26.0; post-control 66.1±24.8. Significant difference between groups (P=0.009). Self-efficacy (6 months) pre-intx 3.38±0.96; post-intx 3.56±0.87; pre-control 3.22±0.75; post-control 3.20±1.01. No significant difference between groups (P=0.23). Decisional balance index (6 months) pre-intx 2.02±1.05; post-intx 2.07±1.26; pre-control 1.75±0.93; post-control 1.86±1.15. No significant difference between groups (P=0.83). Behavioural processes (6 months) pre-intx 3.14±0.62; post-intx 3.10±0.74; pre-control 3.10±0.63; post-control 2.97±0.71. No significant difference between groups (P=0.64). Enjoyment (6 months) pre-intx 102.48±22.11; post-intx 102.35±17.48; pre-control 102.24±22.91; post-control 97.39±23.90. No significant difference between groups (P=0.22). Social Support (Friends) (6 months) pre-intx 1.30±0.75; post-intx 1.24±0.56; pre-control 1.25±0.64; post-control 1.20±0.52. Significant difference between groups (P=0.02).

				Social Support (Family) (6 months) pre-intx 1.49±1.03; post-intx 1.57±0.98; pre-control 1.65±1.08; post-control 1.47±0.78 No significant difference between groups (P=0.08).
Reid et al., 2020, Canada	N=449 (intx=226, control=223); Age: intx=63.7 ± 9.9 yrs, control=64.0 ± 9.8 yrs; Female: intx=30.2%, control=30.1%; Non CAD: none	Usual care control: y Comparison: n	50 weeks; 9 sessions; unsupervised; ≥150 minutes MVPA/week, aerobic exercise (mostly walking); comprehensive: n, tech: telephone	Exercise capacity (ml O2/kg/min) (12 months) pre-intx 24.76±6.47; post-intx 24.64±5.92; pre-control 24.97±7.04; post-control 25.21 ±8.04). No significant difference within intervention group (P=0.864) or control groups (P=0.796) and between groups (P=0.598). Exercise capacity,(METS) (12 months) pre-intx 7.7±2.8; post-intx 7.00±1.7; pre-control 7.3±2.2; post-control 7.18 ±2.3. Significant differences within intervention groups (P =0.001). No significant difference within usual care groups (P=0.283) or between groups (P=0.559). Weekly MVPA (non-bouted; in minutes) (12 months) pre-intx 294.9±185.2; post-intx 266.7 ±194.9; pre-control 302.7±200.1; post-control 264.4±186.6. Significant differences within intervention and usual care groups (P<0.001, 0.008). No significant difference between groups (P=0.916). Body mass index (kg/m2) (12 months) pre-intx 28.42±4.94; post-intx 28.61±5.04; pre-control 28.47±5.05; post-control 29.02±5.27. Significant differences within intervention and usual care groups (P=0.006, 0.01). No significant difference between groups (P=0.468). Waist circumference (cm) (12 months) pre-intx 99.2±13.6; post-intx 100.3±13.9; pre-control 98.4±13.3; post-control 100.0±13.9. Significant differences within intervention groups (P =0.017). No significant difference within usual care groups (P=0.066) or between groups (P=0.839). Systolic blood pressure (mmHg) (12 months) pre-intx 120.6±15.9; post-intx 124.4±14.9; pre-control 120.6±17.6; post-control 126.53±15.3. . Significant differences within intervention and usual care groups (P<0.001, <0.001). No significant difference between groups (P=0.203). Quality of life (EQ-5d VAS), (12 months) pre-intx 75.5±14.5; post-intx 79.2±12.9; pre-control 79.1±12.5; post-control 79.8±11.3. Significant differences within intervention groups (P =0.006). No significant difference within usual care groups (P=0.747) or between groups (P=0.668).
Sunamura et al., 2018, Netherlands	N=914 (intx=309, comparison=299, control=306); Age: intx=57.5 ± 9.2 yrs, comparison=57.1 ± 9.7 yrs, control=57.4 ± 9.3yrs; Female: intx=20.7%, comparison=17.1%, control=19.6%; Non CAD: none	Usual care control: y Comparison: y; 9 months; unsupervised; 5-6 telephone coaching sessions at 5 to 6-week intervals; at least 5 times a week, moderate intensity, 30 minutes, aerobic exercise; comprehensive: lifestyle counselling; tech: telephone	9 months; 3 group sessions at 1, 3, and 9 months; supervised; at least 5 times a week, moderate intensity, 30 minutes, aerobic exercise (running/brisk walking); comprehensive: lifestyle counselling; tech: n.	Mortality (18 months) post-intx 1; post-control (1) 1; post-control (2) 0. No significant difference between groups (P=0.56, 0.56). Total events (18 months) post-intx 83; post-control (1) 79; post-control (2) 70. No significant difference between groups (P=0.25, 0.44). STEMI (18 months) post-intx 1; post-control (1) 5; post-control (2) 2. No significant difference between groups (P=0.56, 0.24). NSTEMI (18 months) post-intx 5; post-control (1) 3; post-control (2) 3. No significant difference between groups (P=0.49, 0.98). Unstable angina (18 months) post-intx 4; post-control (1) 3; post-control (2) 2. No significant difference between groups (P=0.4, 0.64). Stable angina (18 months)

				post-intx 14; post-control (1) 13; post-control (2) 9. No significant difference between groups (P=0.65, 0.64). Chest pain (18 months) post-intx 16; post-control (1) 12; post-control (2) 11. No significant difference between groups (P=0.58, 0.53). Ventricular fibrillation (18 months) post-intx 6; post-control (1) 2; post-control (2) 2. No significant difference between groups (P=0.16, 0.98). Atrial fibrillation (18 months) post-intx 0; post-control (1) 1; post-control (2) 0. No significant difference between intervention and usual care groups (P=0.31). Arrhythmia (18 months) post-intx 0; post-control (1) 1; post-control (2) 0. No significant difference between intervention and usual care groups (P=0.31). Cerebrovascular accident (18 months) post-intx 0; post-control (1) 0; post-control (2) 0. Coronary angiogram (18 months) post-intx 8; post-control (1) 5; post-control (2) 7. No significant difference between groups (P=0.81, 0.59). PCI (18 months) post-intx 9; post-control (1) 9; post-control (2) 12. No significant difference between groups (P=0.98, 0.85). CABG (18 months) post-intx 1; post-control (1) 0; post-control (2) 2. No significant difference between groups (P=0.56, 0.16). Admission to cardiac ER (18 months) post-intx 18; post-control (1) 24; post-control (2) 20. No significant difference between groups (P=0.55, 0.90). Functional Capacity (6MWT in meter) (9 months) pre-intx 608±84; post-intx 600±85; pre-control (1) 601±89; post-control (1) 597±79 pre-control (2) 598±82; post-control (2) 596±82. SBP (mm Hg) (9 months) pre-intx 126; post-intx 132.8; pre-control (1) 125.2; post-control (1) 133.3; pre-control (2) 126.5; post-control (2) 132.2. DBP (mm Hg) (9 months) pre-intx 76.6; post-intx 79.0; pre-control (1) 79.9; post-control (1) 80.1; pre-control (2) 80.7; post-control (2) 79.0. Total cholesterol (mmol /L) (9 months) pre-intx 4.0; post-intx 4.1; pre-control (1) 4.2; post-control (1) 4.3; pre-control (2) 4.2; post-control (2) 4.3. HDL cholesterol (mmol /L) (9 months) pre-intx 1.1; post-intx 1.2; pre-control (1) 1.2; post-control (1) 1.3; pre-control (2) 1.1; post-control (2) 1.2. LDL cholesterol (mmol /L) (9 months) pre-intx 2.3; post-intx 2.3; pre-control (1) 2.5; post-control (1) 2.4 ; pre-control (2) 2.5; post-control (2) 2.5. Triglyceride (mmol /L) (9 months) pre-intx 1.5; post-intx 1.5; pre-control (1) 1.7; post-control (1) 1.7 ; pre-control (2) 1.8; post-control (2) 1.8.

				Body mass index (kg/m2) (9 months) pre-intx 28.0; post-intx28.2; pre-control (1) 27.8; post-control (1) 28.0; pre-control (2) 27.8; post-control (2) 28.1. Waist circumference (cm) (9 months) pre-intx 99.8; post-intx 102.6; pre-control (1) 100.0; post-control (1) 102.5; pre-control (2) 99.7; post-control (2) 102.6. Tobacco Use (9 months) pre-intx 25.2; post-intx 26.9; pre-control (1) 21.1; post-control (1) 25.8; pre-control (2) 27.1; post-control (2) 27.5. Significant difference between intervention and usual care groups (P<0.001). No significant difference between intervention and active comparison groups (P=0.34). QOL- Emotional (MacNew) (9 months) pre-intx 5.48±1.12; post-intx 5.64±1.01; pre-control (1) 5.57±1.01; post-control (1) 5.76±0.96; pre-control (2) 5.38 ±1.20; post-control (2) 5.51±1.04. QOL-Physical (MacNew) (9 months) pre-intx 5.74±1.09; post-intx 5.99±1.01; pre-control (1) 5.75 ±1.07; post-control (1) 6.01±0.98, pre-control (2) 5.62±1.18; post-control (2) 5.85±1.05. QOL-Social (MacNew) (9 months) pre-intx 6.11±1.10; post-intx 6.25±0.78; pre-control (1) 6.25±0.98; post-control (1) 6.41±0.80; pre-control (2) 5.92±1.18; post-control (2) 6.33±0.89. Fatigue (9 months) pre-intx 3.29±1.48; post-intx 2.56±1.18; pre-control (1) 3.32±1.52; post-control (1) 2.74±1.33 pre-control (2) 3.33±1.38; post-control (2) 2.87±1.46. Participation in Society- Frequency Score (9 months) pre-intx 37.2±10.9; post-intx 36.5±11.1; pre-control (1) 37.3±10.6; post-control (1) 36.2±10.6 pre-control (2) 36.7±10.6; post-control (2) 36.2±10.4. Participation in Society-Restriction Score (9 months) pre-intx 100±37.1; post-intx 100±52.1; pre-control (1) 100±29.1; post-control (1) 100±33.1; pre-control (2) 100±56.1; post-control (2) 100±7.1. Participation in Society- Satisfaction Score (9 months) pre-intx 73.8±15.8; post-intx 74.5±15.6; pre-control (1) 74.5±15.1; post-control (1) 76.3±13.6 pre-control (2) 73.4±15.8; post-control (2) 73.8±16.4.
Vieira et al., 2018, Portugal	N=46 (intx=15, comparison=15, control=16); Age: intx=55 ± 9.0 yrs, comparison=59 ± 11.3 yrs, control=59 ± 5.8 yrs; Female=0; Non CAD: none	Usual care control: y Comparison: y; 6 months; weekly; unsupervised; 3 times/week, moderate intensity at 65% of the HR reserve in the first 3 months and 70% of the HR reserve after 3 months (a rating of 12-13 on the 20-scale Borg scale of perceived exertion), 71-86 minutes, aerobic exercise (step forward, sideways and backward, walk; in	6 months; weekly; unsupervised; 3 times/week, moderate intensity at 65% of the HR reserve in the first 3 months and 70% of the HR reserve after 3 months (a rating of 12-13 on the 20-scale Borg scale of perceived exertion), 71-86 minutes, aerobic exercise (step forward, sideways and backward, walk; in addition, walking for 30 minutes daily was recommended) and	Body mass index (kg/m^2) (6 months) pre-intx 27.4±3.0; post-intx 27.4±4.2; pre-control (1) 26.9±4.7; post-control (1) 25.9±3.0 pre-control (2) 28.0±3.6; post-control (2) 28.1±3.5. No significant difference between or within groups. Waist-to-hip ratio pre-intx 0.95±0.004; post-intx 0.93±0.04; pre-control (1) 0.94±0.08; post-control (1) 0.94±0.005 pre-control (2) 0.94±0.04; post-control (2) 0.95±0.06. No significant difference between or within groups. Waist-to-height-ratio (6 months) pre-intx 0.56±0.04; post-intx 0.56±0.06; pre-control (1) 0.55±0.07; post-control (1) 0.56±0.06 pre-control (2) 0.57±0.06; post-control (2) 0.57±0.06. No significant difference between or within groups. % Body fat at trunk (6 months) pre-intx 28.7±5.4; post-intx 28.7±5.9; pre-control (1) 25.7±5.9; post-control (1) 25.8±5.7 pre-control (2) 24.0±5.9; post-control (2) 25.8±5.7. No significant difference between or within groups. Lean Mass (kg) (6 months)

		addition, walking for 30 minutes daily was recommended) and strength training (squats, crossing, ankle movement, backward movements of the arms, sit and stand), warm up and stretching; exercise protocol was performed with a paper booklet; comprehensive: n, tech: email or telephone	strength training (squats, crossing, ankle movement, backward movements of the arms, sit and stand), warm up and stretching; exercise protocol was performed with Kinect; comprehensive: n, tech: Kinect (virtual reality-based technology), telephone	pre-intx 55.0±6.4; post-intx 54.0±6.0; pre-control (1) 54.8±9.5; post-control (1) 54.7±9.0 pre-control (2) 58.6±7.0; post-control (2) 57.5±6.5. No significant difference between or within groups. <u>Total cholesterol (mmol/L) (6 months)</u> pre-intx 3.74±1.53; post-intx 3.66±0.69; pre-control (1) 3.82±0.93; post-control (1) 4.54±1.17 pre-control (2) 3.80±1.10; post-control (2) 4.37±0.59. No significant difference between or within groups. <u>High-density lipoprotein cholesterol (mmol/L) (6 months)</u> pre-intx 1.09±0.16; post-intx 1.17±0.17; pre-control (1) 1.05±0.21; post-control (1) 1.03±0.16 pre-control (2) 1.13±0.21; post-control (2) 1.26±0.26. No significant difference between or within groups. <u>Low-density protein cholesterol (mmol/L) (6 months)</u> pre-intx 2.03±0.97; post-intx 1.85±0.73; pre-control (1) 2.04±0.48; post-control (1) 2.56±0.89 pre-control (2) 2.21±1.00; post-control (2) 2.53±0.56. No significant difference between or within groups. <u>Triglycerides (mmol/L) (6 months)</u> pre-intx 1.19±0.44; post-intx 1.18±0.43; pre-control (1) 1.41±0.64; post-control (1) 1.76±0.74 pre-control (2) 1.04±0.19; post-control (2) 1.14±0.16. No significant difference between or within groups. <u>% Body fat (6 months)</u> pre-intx 25.5±4.3; post-intx 25.7±5.4; pre-control (1) 23.5±5.1; post-control (1) 23.5±6.0 pre-control (2) 22.5±4.9; post-control (2) 24.1±5.2. No significant difference between or within groups. <u>QOL (MacNew)-Total (6 months)</u> pre-intx 5.7±1.0; post-intx 6.2±0.8; pre-control (1) 5.7±0.7; post-control (1) 6.0±0.6 pre-control (2) 5.9±0.6; post-control (2) 6.0±0.6. Significant difference within intervention group (P=0.032). No significant difference within active comparison or usual care and between groups. <u>QOL (MacNew)- Physical (6 months)</u> pre-intx 5.7±1.0; post-intx 6.2±0.8; pre-control (1) 5.5±0.9; post-control (1) 6.0±0.8 pre-control (2) 5.8±0.8; post-control (2) 6.0±0.8. No significant difference between or within groups. <u>QOL (MacNew)- Emotional (6 months)</u> pre-intx 5.6±0.9; post-intx 6.0±0.9; pre-control (1) 5.4±0.7; post-control (1) 5.9±0.8 pre-control (2) 5.6±0.7; post-control (2) 5.9±0.8. No significant difference between or within groups. <u>QOL (MacNew)-Social (6 months)</u> pre-intx 6.2±1.1; post-intx 6.6±0.8; pre-control (1) 6.0±1.0; post-control (1) 6.6±0.6 pre-control (2) 6.5±0.6; post-control (2) 6.6±0.6. No significant difference between or within groups. <u>DASS 21- Total (6 months)</u> pre-intx 24.6±29.3; post-intx 15.3±19.8; pre-control (1) 23.2±15.0; post-control (1) 19.5±20.7 pre-control (2) 24.6±17.2; post-control (2) 21.6±19.7. No significant difference between or within groups. <u>DASS 21- Depression (6 months)</u> pre-intx 2.2±2.5; post-intx 2.4±3.6; pre-control (1) 8.6±6.1; post-control (1) 5.6±6.7 pre-control (2) 4.2±3.8; post-control (2) 5.5±5.4. Significant difference between intervention and usual care groups (P=0.012) at baseline but no significant difference between or within groups following the intervention.

				DASS 21- Anxiety (6 months) pre-intx 2.7±2.0; post-intx 0.9±1.1; pre-control (1) 8.0±9.1; post-control (1) 5.2±5.6 pre-control (2) 6.9±7.4; post-control (2) 4.4±4.5. No significant difference between or within groups. DASS 21- Stress (6 months) pre-intx 11.1±12.0; post-intx 8.2±9.1; pre-control (1) 11.6±11.2; post-control (1) 8.7±8.7 pre-control (2) 12.0±7.6; post-control (2) 11.8±11.3. No significant difference between or within groups. Trail Making Test (6 months) pre-intx 64.9±29.0; post-intx 44.5±17.1; pre-control (1) 105.5 ±41.7; post-control (1) NR; pre-control (2) 51.2±32.3; post-control (2) 53.0±29.8. Significant difference between intervention and usual care groups (P=0.003) and within active comparison group (P=0.11). No significant difference between intervention and active comparison groups (P=0.27). Verbal Digit Span (6 months) pre-intx 1.9±1.3; post-intx 2.2±1.3; pre-control (1) 1.5±1.3; post-control (1) 1.8±1.0 pre-control (2) 2.1±1.1; post-control (2) 1.4±1.1. No significant difference between or within groups. Stroop test (6 months) pre-intx -4.7±8.8; post-intx 1.7±7.1; pre-control (1) 2.8±8.0; post-control (1) -0.9±6.8 pre-control (2) -1.3±8.0; post-control (2) -2.4±5.7. Significant difference between intervention (P=0.21) and active comparison group (P=0.002) with usual care group and also significant difference within intervention group (P=0.02). No significant difference within active comparison or usual care group.

6MWT=6-minute walk test, ACE=angiotensin-converting enzyme, AP=angina pectoris, ASA= acetylsalicylic acid, BMI=body mass index, CABG=coronary artery bypass grafting, CAD=coronary artery disease, control 1=active comparison, control 2=usual care, CV=cardiovascular, DASS= depression, anxiety and stress scale, DBP=diastolic blood pressure, ER=emergency room, Ex Rx=exercise prescription, FITT=frequency, intensity, time, type of exercise, HDL-C=high-density lipoprotein cholesterol, HIIT=High-intensity interval training, HR=heart rate, intx=intervention, intx=intervention, LDL-C=low-density lipoprotein cholesterol, LVEF=left ventricular ejection fraction, METs=metabolic equivalent task, MI=myocardial infarction, MVPA=moderate to vigorous intensity physical activity, n=no, NSTEMI=non-ST-elevation myocardial infarction, PCI=percutaneous coronary intervention, QOL=quality of life, RER= respiratory exchange ratio, SBP=systolic blood pressure, STEMI=ST-elevation myocardial infarction, TC=total cholesterol, tech=technology, y=yes

Table 2a: Summary of findings and certainty assessment-Intervention compared to Usual Care

Certainty assessment						№ of patients		Effect		Certainty	Importance
№ of studies	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**Intervention**	**Usual care**	**Relative (95% CI)**	**Absolute (95% CI)**		
Total mortality											
2	not serious	not serious	not serious	serious [a,b]	none	35/1929 (1.8%)	43/1927 (2.2%)	**RR 0.81** (0.52 to 1.26)	**4 fewer per 1,000** (from 11 fewer to 6 more)	⊕⊕⊕◯ MODERATE	CRITICAL
Myocardial Infarction											
2	not serious	not serious	not serious	serious [a,b]	none	29/1929 (1.5%)	49/1927 (2.5%)	**RR 0.66** (0.32 to 1.36)	**9 fewer per 1,000** (from 17 fewer to 9 more)	⊕⊕⊕◯ MODERATE	CRITICAL
Angina											
2	not serious	serious [c]	not serious	serious [b]	none	98/1929 (5.1%)	102/1927 (5.3%)	**RR 1.08** (0.61 to 1.91)	**4 more per 1,000** (from 21 fewer to 48 more)	⊕⊕◯◯ LOW	IMPORTANT
PCI											

Certainty assessment						№ of patients		Effect		Certainty	Importance
№ of studies	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Intervention	Usual care	Relative (95% CI)	Absolute (95% CI)		
2	not serious	not serious	not serious	serious [a,b]	none	153/1929 (7.9%)	171/1927 (8.9%)	**RR 0.90** (0.73 to 1.10)	**9 fewer per 1,000** (from 24 fewer to 9 more)	⨁⨁⨁◯ MODERATE	CRITICAL

CABG

2	not serious	not serious	not serious	serious [a,b]	none	46/1929 (2.4%)	52/1927 (2.7%)	**RR 0.89** (0.60 to 1.31)	**3 fewer per 1,000** (from 11 fewer to 8 more)	⨁⨁⨁◯ MODERATE	CRITICAL

Exercise Capacity (METs)

3	serious [d,e]	not serious	not serious	serious [a]	none	223	224	-	MD **0.15 higher** (0.24 lower to 0.54 higher)	⨁⨁◯◯ LOW	IMPORTANT

VO2 Peak

Certainty assessment						№ of patients		Effect		Certainty	Importance
№ of studies	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Intervention	Usual care	Relative (95% CI)	Absolute (95% CI)		
4	serious [e,f]	serious [g]	not serious	serious [a,b]	none	192	207	-	MD **0.53 higher** (4 lower to 5.05 higher)	⨁◯◯◯ VERY LOW	IMPORTANT
Body Mass Index (BMI)											
5	serious [e]	serious [g]	not serious	serious [a]	none	348	360	-	MD **0.23 higher** (1.15 lower to 1.61 higher)	⨁◯◯◯ VERY LOW	LIMITED IMPORTANCE
Waist Circumference											
3	serious [e]	serious [g]	not serious	serious [a]	none	316	323	-	MD **3.82 higher** (0.78 lower to 8.42 higher)	⨁◯◯◯ VERY LOW	LIMITED IMPORTANCE
Systolic Blood Pressure											

Certainty assessment						№ of patients		Effect		Certainty	Importance
№ of studies	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Intervention	Usual care	Relative (95% CI)	Absolute (95% CI)		
4	serious [e]	serious [g]	not serious	serious [a]	none	343	349	-	MD **5.1 lower** (10.47 lower to 0.28 higher)	⨁◯◯◯ VERY LOW	IMPORTANT

Diastolic Blood Pressure

4	serious [e]	serious [c]	not serious	serious [a]	none	343	349	-	MD **1.68 lower** (3.72 lower to 0.37 higher)	⨁◯◯◯ VERY LOW	IMPORTANT

Heart rate

2	serious [f]	serious [g]	not serious	serious [a,b]	none	50	51	-	MD **2.02 lower** (9.57 lower to 5.52 higher)	⨁◯◯◯ VERY LOW	LIMITED IMPORTANCE

Total cholesterol (TC)

Certainty assessment						№ of patients		Effect		Certainty	Importance
№ of studies	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Intervention	Usual care	Relative (95% CI)	Absolute (95% CI)		
5	serious [e]	serious [g]	not serious	serious [a,b]	none	202	191	-	MD **0.48 lower** (1.01 lower to 0.05 higher)	⨁◯◯◯ VERY LOW	IMPORTANT

Low-density lipoprotein cholesterol (LDL-C)

5	serious [e]	serious [g]	not serious	serious [b]	none	202	190	-	MD **0.58 lower** (1.06 lower to 0.1 lower)	⨁◯◯◯ VERY LOW	IMPORTANT

High-density lipoprotein cholesterol (HDL-C)

5	serious [e]	serious [g]	not serious	serious [a,b]	none	202	191	-	MD **0.09 higher** (0.14 lower to 0.33 higher)	⨁◯◯◯ VERY LOW	IMPORTANT

Triglycerides (TG)

Certainty assessment						№ of patients		Effect		Certainty	Importance
№ of studies	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Intervention	Usual care	Relative (95% CI)	Absolute (95% CI)		
5	serious [e]	serious [g]	not serious	serious [a,b]	none	202	191	-	MD **0.02 higher** (0.46 lower to 0.51 higher)	⨁◯◯◯ VERY LOW	IMPORTANT
TC/HDL											
2	serious [d,e]	not serious	not serious	serious [b]	none	144	132	-	MD **0.12 lower** (0.34 lower to 0.09 higher)	⨁⨁◯◯ LOW	IMPORTANT
Glucose											
2	serious [d,e]	not serious	not serious	serious [a,b]	none	154	144	-	MD **0.11 higher** (0.19 lower to 0.4 higher)	⨁⨁◯◯ LOW	IMPORTANT
Tobacco Use											

Certainty assessment						№ of patients		Effect		Certainty	Importance
№ of studies	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Intervention	Usual care	Relative (95% CI)	Absolute (95% CI)		
2	serious [d,e]	serious [c]	not serious	serious [a]	none	70/387 (18.1%)	74/371 (19.9%)	**RR 0.60** (0.13 to 2.71)	**80 fewer per 1,000** (from 174 fewer to 341 more)	⨁◯◯◯ VERY LOW	IMPORTANT

Quality of Life (MacNEW)- Total

2	serious [e]	not serious	not serious	serious [a,b]	none	55	63	-	MD **0.28 higher** (0.05 higher to 0.52 higher)	⨁⨁◯◯ LOW	CRITICAL

Quality of Life (MacNEW)- Emotional

3	serious [d]	not serious	not serious	serious [a]	none	159	288	-	MD **0.05 higher** (0.13 lower to 0.24 higher)	⨁⨁◯◯ LOW	CRITICAL

Quality of Life (MacNEW)- Physical

Certainty assessment						№ of patients		Effect		Certainty	Importance
№ of studies	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Intervention	Usual care	Relative (95% CI)	Absolute (95% CI)		
3	serious [d]	not serious	not serious	serious [a]	none	159	288	-	MD **0.04 higher** (0.13 lower to 0.22 higher)	⊕⊕◯◯ LOW	CRITICAL
Quality of Life (MacNEW)- Social											
3	not serious	not serious	not serious	serious [a]	none	159	288	-	MD **0.01 lower** (0.15 lower to 0.12 higher)	⊕⊕⊕◯ MODERATE	CRITICAL

CI: Confidence interval; **RR:** Risk ratio; **MD:** Mean difference

Explanations

a. CI overlaps no effect and the upper and/or lower confidence limit crosses the minimal important difference (an effect size of 0.5 in either direction is used instead of calculating the effect size for each outcome measure).

b. Total population size or number of events is less than 400.

c. I square is substantial >50%.

d. High risk of reporting bias (selective outcome reporting) in trials with > >60% weight.

e. High risk of attrition bias in trials with >20% weight.

f. Inadequate allocation concealment in trials with >20% weight.

g. P value for heterogeneity (chi square) is <.05, I square is substantial >50%.

Table 2b: Summary of findings and certainty assessment-Intervention compared to Active comparison

Certainty assessment						№ of patients		Effect		Certainty	Importance
№ of studies	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Intervention	Active comparison	Relative (95% CI)	Absolute (95% CI)		
VO2 Peak											
2	serious [a,b]	serious [c]	serious [d]	serious [e]	none	261	253	-	MD **1.58 higher** (2.91 lower to 6.07 higher)	⨁◯◯◯ VERY LOW	IMPORTANT
Quality of Life (MacNEW)- Emotional											
2	serious [b]	not serious	not serious	serious [e,f]	none	133	259	-	MD **0.18 lower** (0.39 lower to 0.03 higher)	⨁⨁◯◯ LOW	CRITICAL
Quality of Life (MacNEW)- Physical											
2	serious [b]	not serious	not serious	serious [e,f]	none	133	259	-	MD **0.02 higher** (0.19 lower to 0.23 higher)	⨁⨁◯◯ LOW	CRITICAL

Certainty assessment						№ of patients		Effect		Certainty	Importance
№ of studies	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Intervention	Active comparison	Relative (95% CI)	Absolute (95% CI)		
Quality of Life (MacNEW)- Social											
2	serious [b]	not serious	not serious	serious [e,f]	none	133	259	-	MD **0.02 higher** (0.15 lower to 0.18 higher)	⨁⨁◯◯ LOW	CRITICAL

CI: Confidence interval; **MD:** Mean difference

Explanations

a. Inadequate allocation concealment in trials with >20% weight.

b. >60% selective outcome reporting.

c. I square is substantial >50%.

d. measurement did not follow similar procedure

e. CI overlaps no effect and the upper and/or lower confidence limit crosses the minimal important difference (an effect size of 0.5 in either direction is used instead of calculating the effect size for each outcome measure).

f. Total population size is less than 400.

Table 3: Selected Trial Outcomes by Sex

	Pre-Maintenance CR				Post-Maintenance CR				Sex Difference at Post-Maintenance CR¤	
	Male		Female		Male		Female			
	Intervention	Usual care	Intervention	Usual care	Intervention	Usual care	Intervention	Usual care	Inter-vention	Usual care
	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	P	P
Main Outcomes										
Exercise capacity (METs)										
Lear 2006	12.1 ± 14.1	11.9 ± 12.0	7.4 ± 2.1	9.6 ± 8.3	12.0 ± 19.0	10.1 ± 2.4†	8.0 ± 2.0	8.1 ± 2.0	.411	.138
Reid 2020	8.19 ± 2.98	7.78 ± 2.32	6.49 ± 1.99	6.04 ± 1.33	7.20 ± 1.83†	7.81 ± 2.35	6.56 ± 1.36	5.83 ± 1.37	.506§	.023§
Exercise capacity (Peak VO_2; ml/kg/min)										
Madssen 2014	28.40 ± 5.03	32.99 ± 5.60*	26.37 ± 3.68	29.43 ± 7.45	29.51 ± 5.48	33.63 ± 5.75*	26.62 ± 5.98	30.63 ± 5.90	.554	.889
Reid 2020	26.19 ± 6.41	26.49 ± 7.26	21.24 ± 5.20	20.77 ± 4.19	25.39 ± 6.23	27.42 ± 8.19	22.95 ± 4.86	20.33 ± 5.06	.728§	.302§
SBP (mmHg)										
Lear 2006	126.5 ± 20.3	124.9 ± 20.4	135.5 ± 24.1	133.3 ± 20.6	125.7 ± 17.3	130.4 ± 20.2†	126.2 ± 22.2	131.2 ± 16.3	.458	.233
Madssen 2014	132.2 ± 13.8	130.4 ± 10.7	136.0 ± 17.2	133.7 ± 22.6	133.4 ± 17.6	138.1 ± 11.1†	134.8 ± 13.7	124.4 ± 16.5	.766	.004
Reid 2020	121.1 ± 15.7	120.1 ± 17.1	119.5 ± 16.3	121.8 ± 18.8	125.3 ± 14.5†	126.2 ± 15.2†	122.5 ± 15.7†	127.2 ± 15.6†	.439	.727
DBP (mmHg)										
Lear 2006	72.7 ± 10.8	72.4 ± 10.1	69.3 ± 11.3	70.9 ± 7.2	74.4 ± 9.6†	77.4 ± 11.9†	71.1 ± 10.1	73.1 ± 6.8	.218	.189
Madssen 2014	77.7 ± 7.4	77.1 ± 10.9	80.7 ± 6.7	70.1 ± 9.0*	80.4 ± 7.7	80.4 ± 7.8	76.2 ± 6.4	70.0 ± 11.8	.035	.050
Reid 2020	72.9 ± 9.0	72.6 ± 10.0	71.4 ± 10.1	71.9 ± 9.3	75.7 ± 9.3†	80.2 ± 11.7	72.5 ± 10.5	73.8 ± 7.6	.088	.457
BMI (kg/m^2)										
Lear 2006	28.2 ± 4.1	27.2 ± 3.6*	26.9 ± 4.9	26.3 ± 3.6	28.6 ± 5.0	27.2 ± 3.9*	26.7 ± 4.9	26.6 ± 3.3	.431	.561
Madssen 2014	28.1 ± 3.6	26.9 ± 3.2	27.8 ± 4.9	23.2 ± 1.5	28.8 ± 4.1†	27.0 ± 3.2	28.3 ± 4.7	23.7 ± 1.8	.793	.885§
Reid 2020	29.02 ± 4.75	28.27 ± 4.77	27.02 ± 5.11	28.94 ± 5.67*	29.27 ± 4.60†	28.94 ± 5.42†	27.06 ± 5.70	29.21 ± 4.95*	.250§	.487
Waist circumference (cm)										
Lear 2006	97.8 ± 11.6	94.8 ± 10.1*	84.7 ± 12.9	82.8 ± 9.8	99.5 ± 13.9†	96.6 ± 10.7†	84.5 ± 12.2	83.0 ± 8.0	.418§	.054§

Madssen 2014	103.5 ± 11.4	96.8 ± 8.1	97.8 ± 16.0	82.0 ± 4.2	105.5 ± 11.0†	96.8 ± 7.9*	99.3 ± 13.5	83.1 ± 4.9*	.623	.887§
Reid 2020	102.2 ± 12.9	100.0 ± 12.9	91.7 ± 12.3	94.7 ± 13.5	103.5 ± 12.7†	102.0 ± 14.2†	92.8 ± 13.7	95.4 ± 12.0	.095§	.011§
TC (mmol/L)										
Lear 2006	4.38 ± 0.82	4.51 ± 0.88	4.87 ± 0.99	4.95 ± 1.09	4.09 ± 0.75†	4.51 ± 0.94*	4.81 ± 1.03	4.70 ± 0.99	.002§	.957§
Madssen 2014	4.43 ± 1.05	4.08 ± 0.60	4.05 ± 0.66	3.57 ± 0.53	4.43 ± 1.05	4.08 ± 0.60	4.18 ± 0.93	3.41 ± 0.46	.820	.287
LDL-C (mmol/L)										
Lear 2006	2.49 ± 0.71	2.68 ± 0.69*	2.69 ± 0.85	2.69 ± 0.96	2.30 ± 0.67†	2.68 ± 0.77*	2.53 ± 0.70	2.65 ± 0.89	.164	.909
Madssen 2014	2.39 ± 0.98	2.11 ± 0.40	1.82 ± 0.67	1.76 ± 0.58	2.30 ± 0.64	2.17 ± 0.51	1.89 ± 0.87	1.65 ± 0.57	.552	.190
HDL-C (mmol/L)										
Lear 2006	1.07 ± 0.25	1.10 ± 0.25	1.45 ± 0.41	1.37 ± 0.31	1.09 ± 0.25	1.15 ± 0.32	1.53 ± 0.42	1.43 ± 0.29	.001§	.243§
Madssen 2014	1.40 ± 0.36	1.27 ± 0.39	1.68 ± 0.36	1.44 ± 0.29	1.42 ± 0.38	1.28 ± 0.47	1.81 ± 0.40	1.43 ± 0.27	.167	.423
Triglycerides (mmol/L)										
Lear 2006	1.78 ± 0.97	1.59 ± 0.80	1.61 ± 0.75	1.93 ± 0.95	1.52 ± 0.74†	1.47 ± 0.85	1.99 ± 3.44	1.45 ± 0.71†	.108	.133
Madssen 2014	1.46 ± 0.92	1.46 ± 0.57	1.13 ± 0.47	0.68 ± 0.26	1.23 ± 0.81	1.52 ± 1.22	1.09 ± 0.51	0.76 ± 0.19	.644	.561§
HbA1c (%)										
Lear 2006	6.05 ± 0.91	6.30 ± 1.15	6.31 ± 1.67	5.52 ± 0.60	6.33 ± 0.61	6.73 ± 1.42	5.90 ± 0.00	6.17 ± 0.64	-	.643§
Madssen 2014	6.07 ± 1.16	6.19 ± 0.83	6.22 ± 1.47	5.74 ± 0.33	6.07 ± 0.94	6.36 ± 1.57	6.17 ± 1.25	5.74 ± 0.17	.332	.658
Tobacco users, n (%)										
Lear 2006	5 (4.0)	6 (4.8)	0 (0)	1 (3.7)	1 (0.9)	4 (4.2)	0 (0.0)	1 (4.3)	1.000	1.000
Madssen 2014	0 (0.0)	1 (5.6)	1 (16.7)	1 (14.3)	0 (0.0)	0 (0.0)	0 (0.0)	1 (14.3)	-	.280
Other outcomes										
Lear 2006										
Framingham risk score	6.17 ± 2.83	6.16 ± 3.02	8.50 ± 3.69	8.19 ± 3.58	5.63 ± 2.58†	6.13 ± 2.72	7.33 ± 3.67	7.32 ± 3.11	.433§	.688§
TC/HDL-C ratio	4.28 ± 1.15	4.26 ± 1.10	3.57 ± 1.07	3.74 ± 0.93	3.89 ± 0.92†	4.10 ± 1.10	3.46 ± 1.73	3.40 ± 0.69	.779§	.054§
Total dietary fat (% daily kcal)	22.09 ± 6.88	22.23 ± 7.68	20.96 ± 6.13	20.91 ± 5.59	25.61 ± 7.16†	25.17 ± 7.24†	23.00 ± 5.54	24.26 ± 7.13	.268	.374
Saturated fat (% daily kcal)	6.52 ± 2.56	6.28 ± 2.55	5.73 ± 2.26	5.68 ± 2.36	8.23 ± 3.69†	7.75 ± 3.32†	7.58 ± 2.84†	7.37 ± 3.27	.684	.254
Unsaturated fat (% daily kcal)	12.86 ± 4.45	12.70 ± 4.69	12.77 ± 4.29	12.82 ± 4.03	14.39 ± 4.60†	14.08 ± 4.43†	13.00 ± 3.76	14.37 ± 4.30	.217	.893
Perceived stress	32.53 ± 7.21	33.05 ± 8.32	33.43 ± 6.14	31.13 ± 8.63	31.11 ± 7.50†	31.74 ± 7.43	36.58 ± 6.94	29.74 ± 8.73*	.007	.497
Illness intrusive	30.30 ± 14.37	32.29 ± 15.32	27.11 ± 10.67	28.94 ± 15.23	28.15 ± 13.61	27.41 ± 13.90†	27.68 ± 13.92	23.95 ± 10.50	.991	.628

Self-efficacy	42.69 ± 3.77	41.77 ± 5.13	43.04 ± 4.08	42.35 ± 5.29	42.41 ± 4.05	41.32 ± 4.77	42.70 ± 3.47	43.24 ± 3.60	.898	.060
Exercise self-efficacy	67.46 ± 10.51	64.44 ± 12.85	66.54 ± 10.13	63.89 ± 15.25	63.09 ± 13.61†	61.08 ± 15.61†	62.88 ± 13.53	64.38 ± 13.06	.981	.198
Madssen 2014										
Peak HR (beats)	153.50 ± 13.69	162.22 ± 9.90*	154.83 ± 14.37	156.57 ± 14.46	153.88 ± 17.31	163.94 ± 10.52*	161.33 ± 10.21	155.57 ± 17.63	.286	.375
HR recovery (beats)	25.78 ± 11.83	27.28 ± 10.55	32.67 ± 5.85	33.83 ± 6.61	31.00 ± 16.10	29.00 ± 10.85	31.67 ± 10.39	33.86 ± 7.03	.479	.621
Resting HR (beats/minute)	63.06 ± 9.76	62.83 ± 12.19	66.33 ± 11.78	57.00 ± 8.66	65.94 ± 12.78	63.00 ± 9.63	64.83 ± 7.81	63.71 ± 15.19	.218	.202
Reid 2020										
Weekly total MVPA (in bouts of ≥ 10 minute)	178.05 ± 149.07	187.60 ± 137.38	132.69 ± 138.29	130.33 ± 116.93	148.42 ± 149.12†	152.80 ± 148.85†	132.63 ± 135.23	111.78 ± 113.14†	.305§	.305§
Weekly total MVPA, unbouted (minutes)	318.53 ± 193.94	331.03 ± 207.39	242.09 ± 152.55	238.59 ± 167.10	284.54 ± 205.26†	284.78 ± 186.52	225.17 ± 163.00	216.85 ± 179.78†	.642§	.182§
Quality of life (VAS)	75.71 ± 14.31	79.13 ± 12.38*	75.08 ± 14.96	79.08 ± 12.85	79.88 ± 12.09†	80.17 ± 11.73	77.71 ± 14.49	78.86 ± 10.31	.487	.397

*intervention vs usual care within sex group; P < .05

†change score from pre- to post-maintainance CR within each sex and comparison group; P < .05

§sex difference at baseline; P < .05

¤using ANCOVA with baseline value as covariate

BMI=body mass index, CR=cardiac rehabilitation, DBP=diastolic blood pressure, HbA1c=glycated hemoglobin, HDL-C=high-density lipoprotein cholesterol, HR=heart rate, LDL-C=low-density lipoprotein cholesterol, METs=metabolic equivalent of tasks, MVPA=moderate-to-vigorous physical activity, Peak VO2=peak oxygen consumption, SBP=systolic blood pressure, SD=standard deviation, TC=total cholesterol, VAS=visual analog scale of EQ-5D

Table 4: Summary of Subgroup Analysis by Sex (Intervention vs Usual care)

Outcome	RCTs (n)	Sample size	MD [95% CI] or RR [95% CI]¤	Heterogeneity		Test of overall effect (Z statistic)	Test for subgroup differences	
				χ^2	I^2 (%)	p value	χ^2 (p value)	I^2 (%)
Exercise capacity (METs)								
Female	2	86	0.54 [-0.11, 1.19]	1.10	9	1.64	0.04	77.3
Male	2	291	-0.52 [-1.27, 0.23]	1.50	34	1.36		
Exercise capacity (Peak VO_2)								
Female	2	148	2.18 [0.55, 3.82]	3.72	73	2.62**	<0.001	93.8
Male	2	350	-2.34 [-3.81, -0.86]	1.04	4	3.10**		
SBP								
Female	3	192	-3.58 [-8.15, 0.99]	3.02	34	1.54	0.60	0
Male	3	546	-2.16 [-4.85, 0.52]	1.71	0	1.58		
DBP								
Female	3	57	-0.32 [-4.90, 4.26]	2.00	50	0.14	0.48	0
Male	3	232	-2.22 [-4.84, 0.40]	0.97	0	1.66		
BMI								
Female	3	192	-0.52 [-1.90, 0.85]	8.80*	77	0.74	0.08	67.7
Male	3	549	0.90 [0.12, 1.68]	2.29	13	2.25*		
Waist circumference								
Female	3	192	0.36 [-3.02, 3.75]	9.22*	78	0.21	0.23	30.0
Male	3	544	2.81 [0.67, 4.94]	3.89	49	2.58*		
TC								
Female	2	56	0.28 [-0.16, 0.73]	0.72	0	1.24	0.02	80.7
Male	2	234	-0.30 [-0.52, -0.08]	4.80*	79	2.64**		
LDL-C								
Female	2	54	-0.10 [-0.52, 0.33]	0.64	0	0.46	0.45	0
Male	2	233	-0.28 [-0.46, -0.10]	5.40*	81	3.01**		
HDL-C								
Female	2	55	0.17 [-0.02, 0.36]	1.75	43	1.77	0.01	83.3
Male	2	234	-0.09 [-0.17, -0.00]	1.59	37	2.08*		
Triglycerides								
Female	2	56	0.32 [-0.09, 0.73]	0.06	0	1.51	0.14	53.5
Male	2	235	-0.03 [-0.25, 0.18]	0.70	0	0.29		

HbA1c								
Female	2	18	0.50 [-0.55, 1.55]	N/A§	N/A§	0.35	0.15	51.7
Male	2	84	-0.36 [-0.89, 0.16]	0.03	1.35	0.18		
Tobacco Use								
Female	2	57	0.37 [0.04, 3.31]	0.00	0.89	0.38	0.75	0
Male	2	237	0.22 [0.03, 1.97]	N/A§§	N/A§§	0.18		

*P<.05; **P<.01

¤Mean Difference for continuous outcomes and Risk Ratio for binary outcome

§Not estimable; 1 trial had very low sample size and SD = 0

§§Not estimable; 1 trial had 0 events

BMI=body mass index, CI=confidence interval, DBP=diastolic blood pressure, HbA1c=glycated hemoglobin, HDL-C=high-density lipoprotein cholesterol, LDL-C=low-density lipoprotein cholesterol, MD=mean difference, METs=metabolic equivalent of tasks, N/A=not applicable, RCT=randomized controlled trial, RR=risk ratio, SBP=systolic blood pressure, TC=total cholesterol, Peak VO_2=peak oxygen consumption

Table 4: Summary of Subgroup Analysis by Sex (Intervention vs Usual care)

Outcome	RCTs (n)	Sample size	MD [95% CI] or RR [95% CI]¤	Heterogeneity		Test of overall effect (Z statistic)	Test for subgroup differences	
				χ^2	I^2 (%)	p value	χ^2 (p value)	I^2 (%)
Exercise capacity (METs)								
Female	2	86	0.54 [-0.11, 1.19]	1.10	9	1.64	0.04	77.3
Male	2	291	-0.52 [-1.27, 0.23]	1.50	34	1.36		
Exercise capacity (Peak VO_2)								
Female	2	148	2.18 [0.55, 3.82]	3.72	73	2.62**	<0.001	93.8
Male	2	350	-2.34 [-3.81, -0.86]	1.04	4	3.10**		
SBP								
Female	3	192	-3.58 [-8.15, 0.99]	3.02	34	1.54	0.60	0
Male	3	546	-2.16 [-4.85, 0.52]	1.71	0	1.58		
DBP								
Female	3	57	-0.32 [-4.90, 4.26]	2.00	50	0.14	0.48	0
Male	3	232	-2.22 [-4.84, 0.40]	0.97	0	1.66		
BMI								
Female	3	192	-0.52 [-1.90, 0.85]	8.80*	77	0.74	0.08	67.7
Male	3	549	0.90 [0.12, 1.68]	2.29	13	2.25*		
Waist circumference								
Female	3	192	0.36 [-3.02, 3.75]	9.22*	78	0.21	0.23	30.0
Male	3	544	2.81 [0.67, 4.94]	3.89	49	2.58*		
TC								
Female	2	56	0.28 [-0.16, 0.73]	0.72	0	1.24	0.02	80.7
Male	2	234	-0.30 [-0.52, -0.08]	4.80*	79	2.64**		
LDL-C								
Female	2	54	-0.10 [-0.52, 0.33]	0.64	0	0.46	0.45	0
Male	2	233	-0.28 [-0.46, -0.10]	5.40*	81	3.01**		
HDL-C								
Female	2	55	0.17 [-0.02, 0.36]	1.75	43	1.77	0.01	83.3
Male	2	234	-0.09 [-0.17, -0.00]	1.59	37	2.08*		
Triglycerides								
Female	2	56	0.32 [-0.09, 0.73]	0.06	0	1.51	0.14	53.5
Male	2	235	-0.03 [-0.25, 0.18]	0.70	0	0.29		

HbA1c								
Female	2	18	0.50 [-0.55, 1.55]	N/A§	N/A§	0.35	0.15	51.7
Male	2	84	-0.36 [-0.89, 0.16]	0.03	1.35	0.18		
Tobacco Use								
Female	2	57	0.37 [0.04, 3.31]	0.00	0.89	0.38	0.75	0
Male	2	237	0.22 [0.03, 1.97]	N/A§§	N/A§§	0.18		

*P<.05; **P<.01

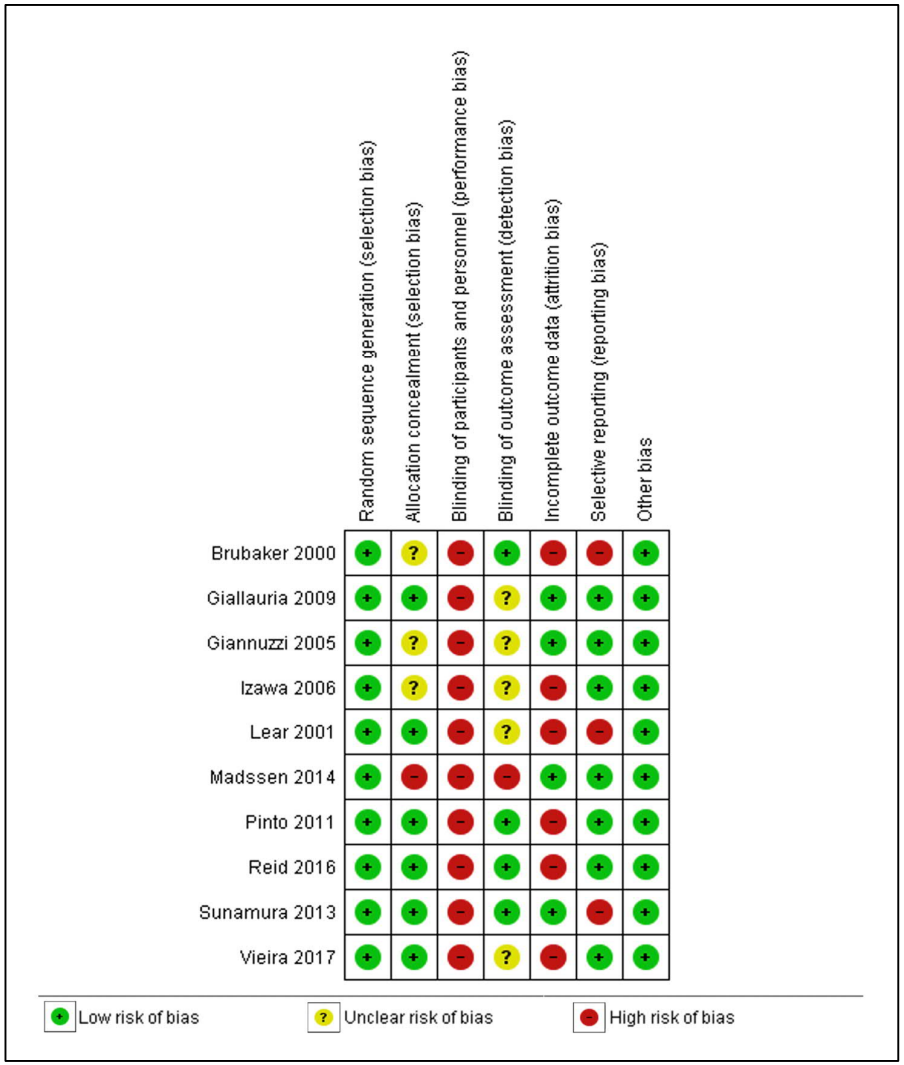
¤Mean Difference for continuous outcomes and Risk Ratio for binary outcome

§Not estimable; 1 trial had very low sample size and SD = 0

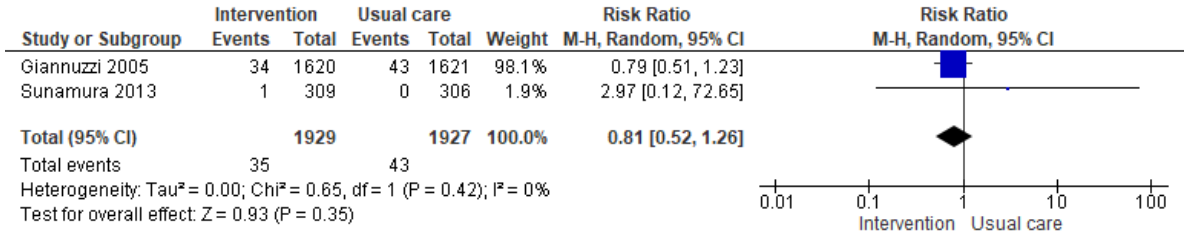
§§Not estimable; 1 trial had 0 events

BMI=body mass index, CI=confidence interval, DBP=diastolic blood pressure, HbA1c=glycated hemoglobin, HDL-C=high-density lipoprotein cholesterol, LDL-C=low-density lipoprotein cholesterol, MD=mean difference, METs=metabolic equivalent of tasks, N/A=not applicable, RCT=randomized controlled trial, RR=risk ratio, SBP=systolic blood pressure, TC=total cholesterol, Peak VO_2=peak oxygen consumption

Supplementary Materials:

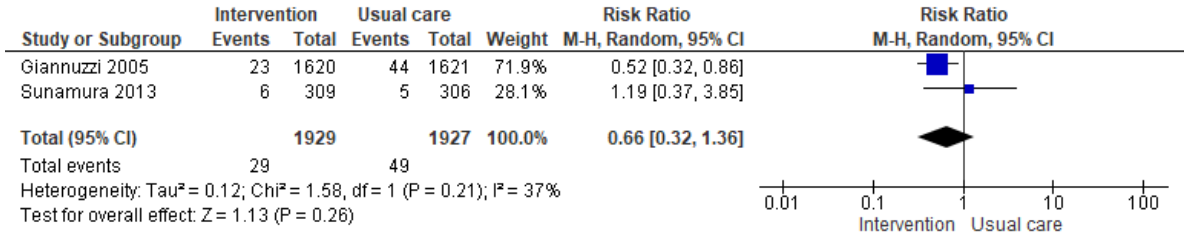


Supplementary Figure 1: Risk of Bias in Each Trial Included in Meta-Analysis



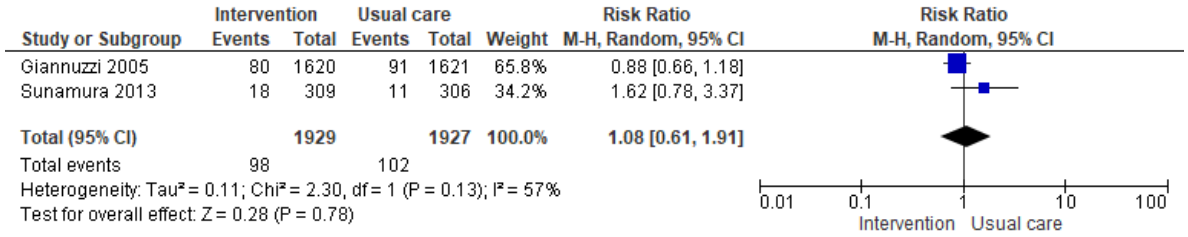
Supplementary Figure 2: Forest plot summarizing effect of maintenance CR on total mortality compared with usual care,

Note: The effect of maintenance CR on total mortality was not meaningful (trials 2; 2 comparisons; participants=3856; risk ratio=0.81, 95% confidence interval=0.52 to 1.26 ; moderate-quality evidence). Heterogeneity was low.



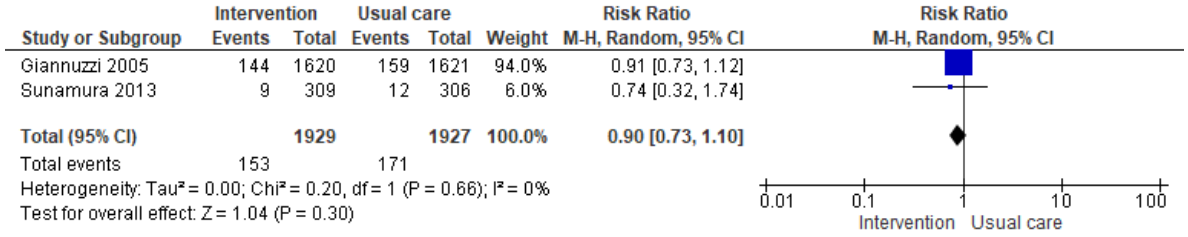
Supplementary Figure 3: Forest plot summarizing effect of maintenance CR on myocardial infarction compared with usual care

Note: the effects of maintenance CR on myocardial infarction were not meaningful (trials 2; 2 comparisons; participants=3856; risk ratio=0.66, 95% confidence interval=0.32 to 1.36; moderate-quality evidence). Heterogeneity was low.



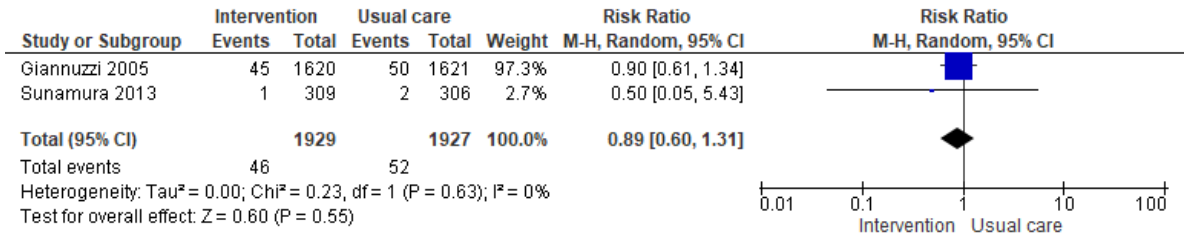
Supplementary Figure 4: Forest plot summarizing effect of maintenance CR on angina compared with usual care

Note: the effects of maintenance CR on angina were not meaningful (trials 2; 2 comparisons; participants=3856; risk ratio=1.08, 95% confidence interval=0.61 to 1.91; low-quality evidence). Heterogeneity was moderate.



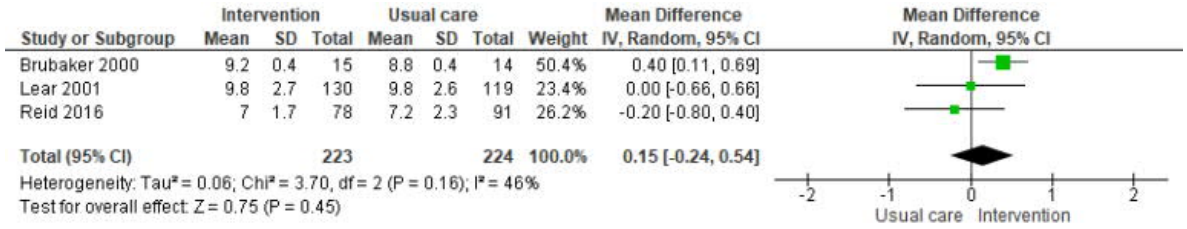
Supplementary Figure 5: Forest plot summarizing effect of maintenance CR on Percutaneous coronary intervention (PCI) compared with usual care

Note: the effects of maintenance CR on Percutaneous coronary intervention (PCI) were not meaningful (trials 2; 2 comparisons; participants=3856; risk ratio=0.90, 95% confidence interval=0.73 to 1.10; moderate-quality evidence). Heterogeneity was low.



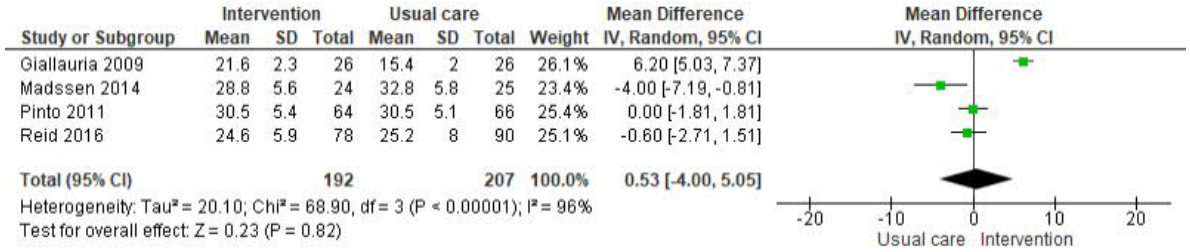
Supplementary Figure 6: Forest plot summarizing effect of maintenance CR on coronary artery bypass grafting (CABG) compared with usual care

Note: the effects of maintenance CR on coronary artery bypass grafting (CABG) were not meaningful (trials 2; 2 comparisons; participants=3856; risk ratio=0.89, 95% confidence interval=0.60 to 1.31; moderate-quality evidence). Heterogeneity was low.



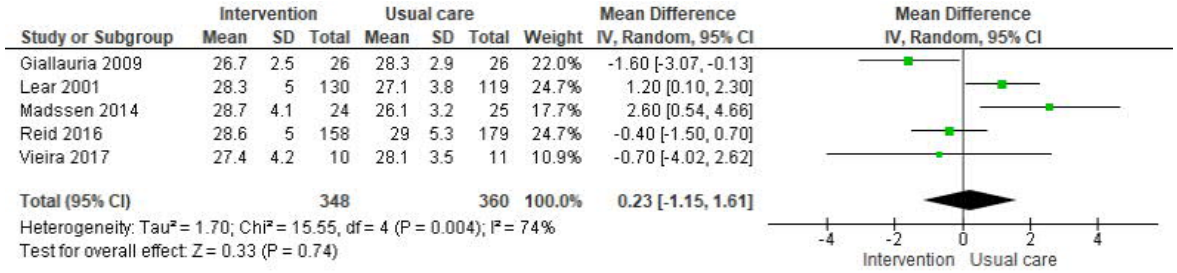
Supplementary Figure 7: Forest plot summarizing effect of maintenance CR on exercise capacity (METs) compared with usual care

Note: the effects of maintenance CR on exercise capacity (METs) were not meaningful (trials 3; 3 comparisons; participants=447; mean difference=0.15, 95% confidence interval=-0.24 to 0.54; low-quality evidence). Heterogeneity was low.



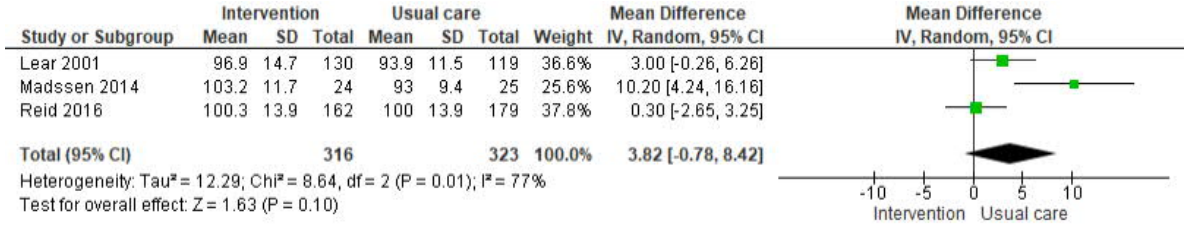
Supplementary Figure 8: Forest plot summarizing effect of maintenance CR on VO2 Peak compared with usual care

Note: the effects of maintenance CR on VO2 Peak were not meaningful (trials 4; 4 comparisons; participants=399; mean difference=0.53, 95% confidence interval=-4.00 to 5.05; very low-quality evidence). Heterogeneity was high.



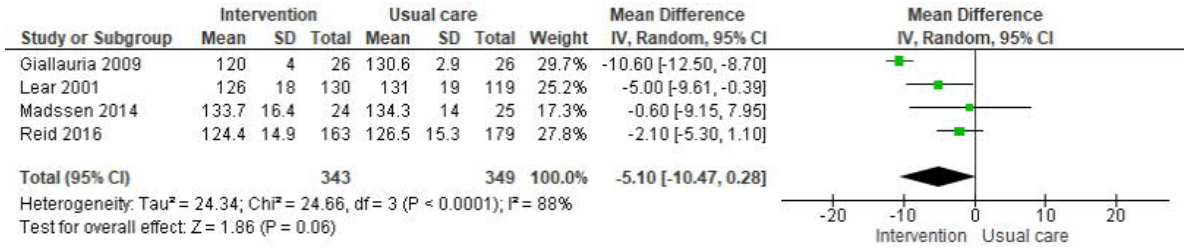
Supplementary Figure 9: Forest plot summarizing effect of maintenance CR on body mass index (BMI) compared with usual care

Note: the effects of maintenance CR on body mass index (BMI) were not meaningful (trials 5; 5 comparisons; participants=708; mean difference=0.23, 95% confidence interval=-1.15 to 1.61; very low-quality evidence). Heterogeneity was moderate.



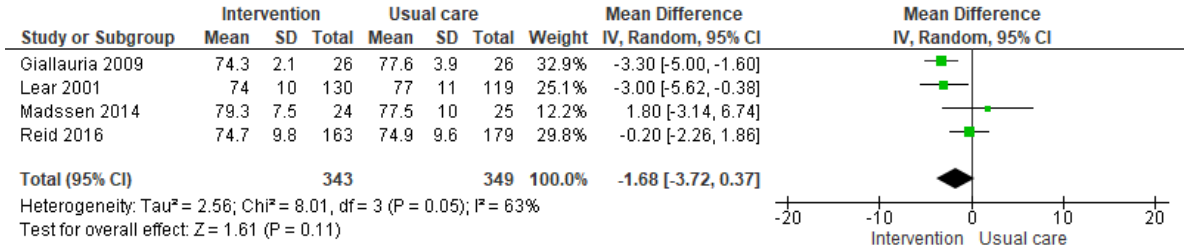
Supplementary Figure 10: Forest plot summarizing effect of maintenance CR on waist circumference compared with usual care

Note: the effects of maintenance CR on Waist Circumference were not meaningful (trials 3; 3 comparisons; participants=639; mean difference=3.82, 95% confidence interval=-0.78 to 8.42; very low-quality evidence). Heterogeneity was high.



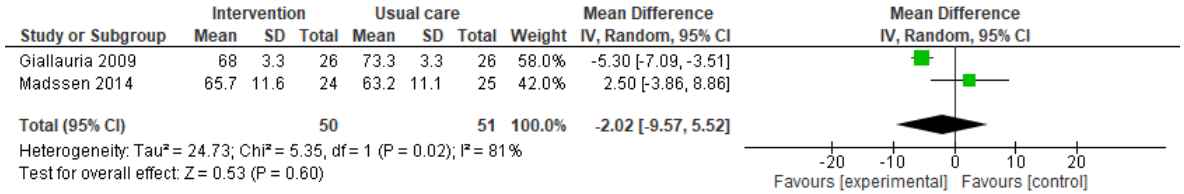
Supplementary Figure 11: Forest plot summarizing effect of maintenance CR on systolic blood pressure compared with usual care

Note: the effects of maintenance CR on systolic blood pressure were not meaningful (trials 4; 4 comparisons; participants=692; mean difference=-5.10, 95% confidence interval=-10.47 to 0.28; very low-quality evidence). Heterogeneity was high.



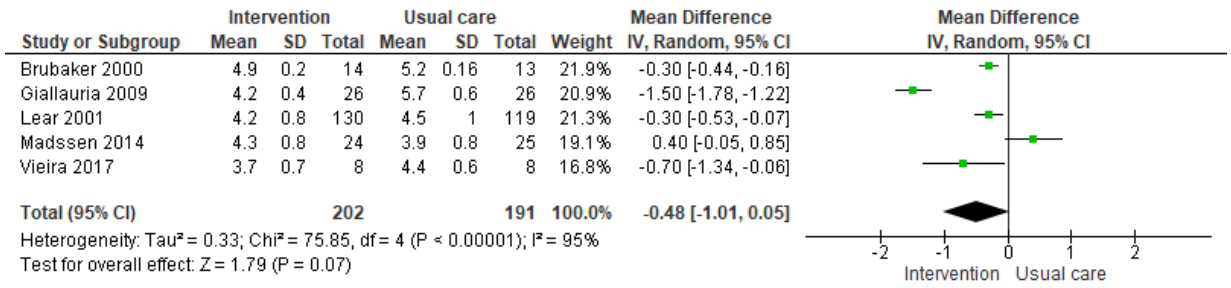
Supplementary Figure 12: Forest plot summarizing effect of maintenance CR on Diastolic Blood Pressure compared with usual care

Note: the effects of maintenance CR on diastolic blood pressure were not meaningful (trials 4; 4 comparisons; participants=692; mean difference=-1.68, 95% confidence interval= -3.72 to 0.37; very low-quality evidence). Heterogeneity was moderate.



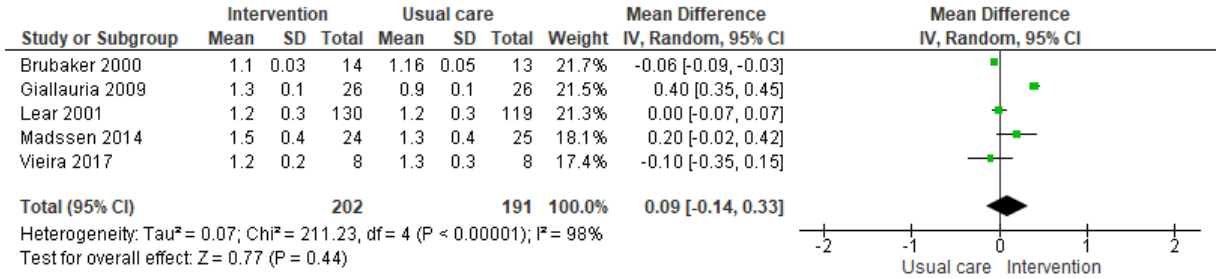
Supplementary Figure 13: Forest plot summarizing effect of maintenance CR on heart rate compared with usual care

Note: the effects of maintenance CR on heart rate were not meaningful (trials 2; 2 comparisons; participants=101; mean difference=-2.02, 95% confidence interval=-9.57 to 5.52; very low-quality evidence). Heterogeneity was high.



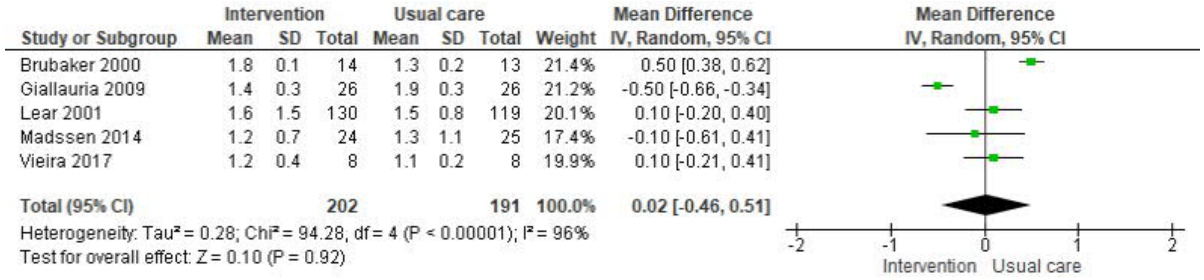
Supplementary Figure 14: Forest plot summarizing effect of maintenance CR on total cholesterol compared with usual care

Note: the effects of maintenance CR on total cholesterol were not meaningful (trials 5; 5 comparisons; participants=393; mean difference=-0.48, 95% confidence interval=-1.01 to 0.05; very low-quality evidence). Heterogeneity was high.



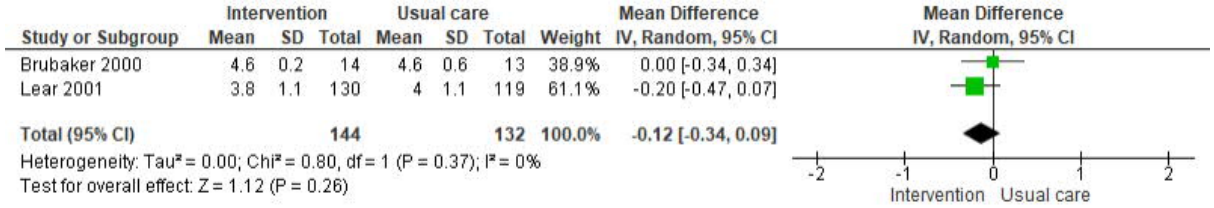
Supplementary Figure 15: Forest plot summarizing effect of maintenance CR on high density lipoprotein cholesterol (HDL-C) compared with usual care

Note: the effects of maintenance CR on high density lipoprotein cholesterol (HDL-C) were not meaningful (trials 5; 5 comparisons; participants=393; mean difference=0.09, 95% confidence interval=-0.14 to 0.33; very low-quality evidence). Heterogeneity was high.



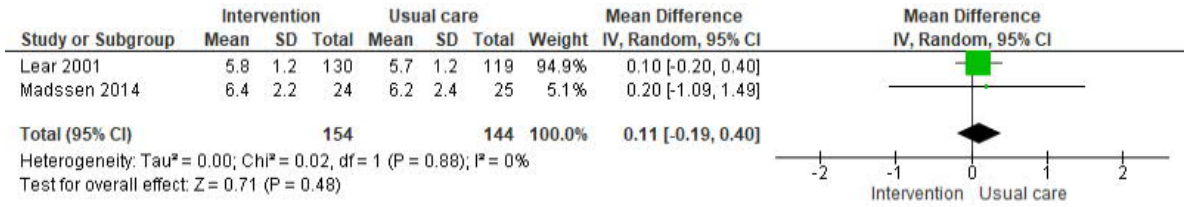
Supplementary Figure 16: Forest plot summarizing effect of maintenance CR on triglycerides compared with usual care

Note: the effects of maintenance CR on triglycerides were not meaningful (trials 5; 5 comparisons; participants=393; mean difference=-0.02, 95% confidence interval=-0.46 to 0.51; very low-quality evidence). Heterogeneity was high.



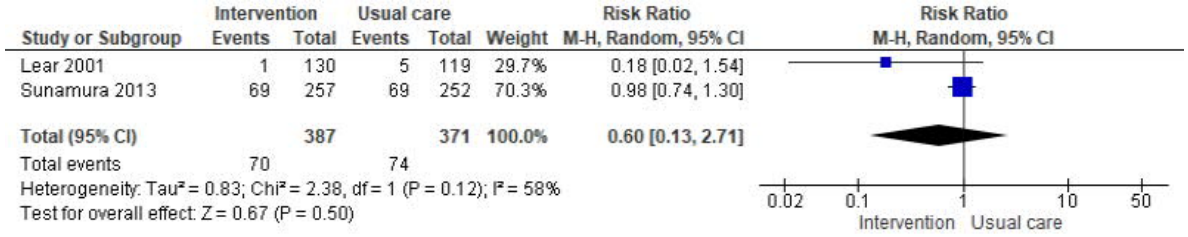
Supplementary Figure 17: Forest plot summarizing effect of maintenance CR on total cholesterol/ high density lipoprotein (TC/HDL) ratio compared with usual care

Note: the effects of maintenance CR on total cholesterol/ high density lipoprotein (TC/HDL) were not meaningful (trials 2; 2 comparisons; participants=276; mean difference=-0.12, 95% confidence interval=0.34 to 0.09; low-quality evidence). Heterogeneity was high.



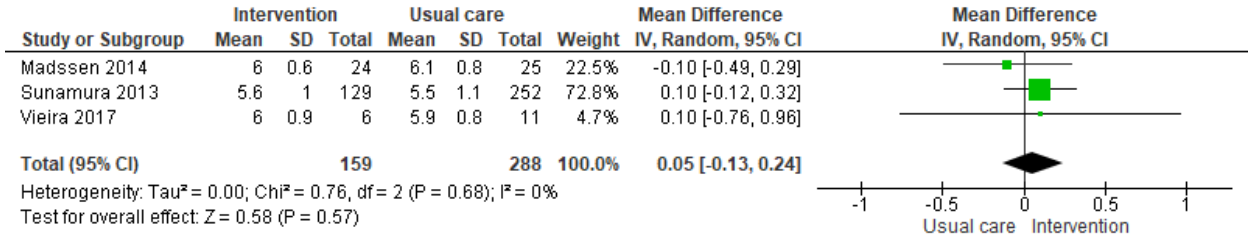
Supplementary Figure 18: Forest plot summarizing effect of maintenance CR on glucose compared with usual care

Note: the effects of maintenance CR on glucose were not meaningful (trials 2; 2 comparisons; participants=298; mean difference=0.11, 95% confidence interval=-0.19 to 0.40; low-quality evidence). Heterogeneity was low.



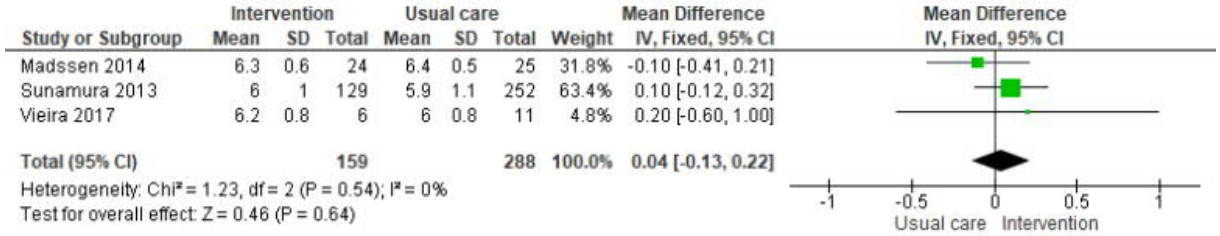
Supplementary Figure 19: Forest plot summarizing effect of maintenance CR on tobacco use compared with usual care

Note: the effects of maintenance CR on tobacco use were not meaningful (trials 2; 2 comparisons; participants=758; risk ratio=0.60, 95% confidence interval=0.13 to 2.71; very low-quality evidence). Heterogeneity was moderate.



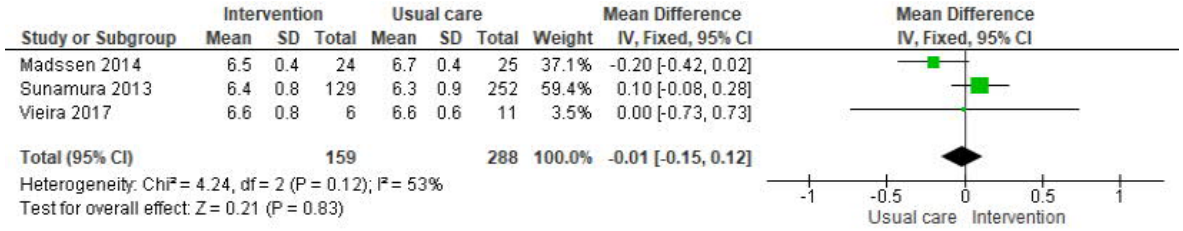
Supplementary Figure 20: Forest plot summarizing effect of maintenance CR on quality of life (QOL)- emotional compared with usual care

Note: the effects of maintenance CR on quality of life (QOL)- emotional were not meaningful (trials 3; 3 comparisons; participants=447; mean difference=0.05, 95% confidence interval=-0.13 to 0.24; low-quality evidence). Heterogeneity was low.



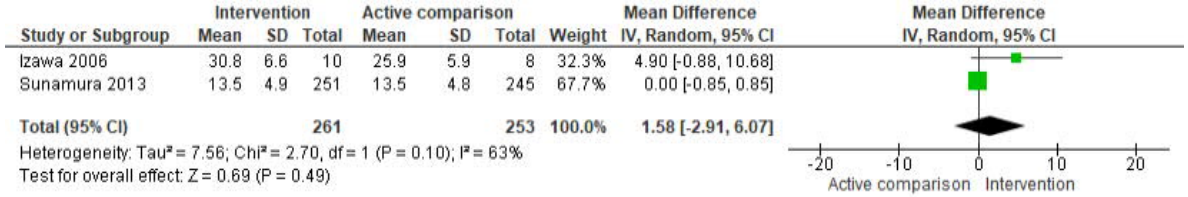
Supplementary Figure 21: Forest plot summarizing effect of maintenance CR on quality of life (QOL)- physical compared with usual care

Note: the effects of maintenance CR on quality of life (QOL)- physical were not meaningful (trials 3; 3 comparisons; participants=447; mean difference=0.04, 95% confidence interval=-0.13 to 0.22; low-quality evidence). Heterogeneity was low.



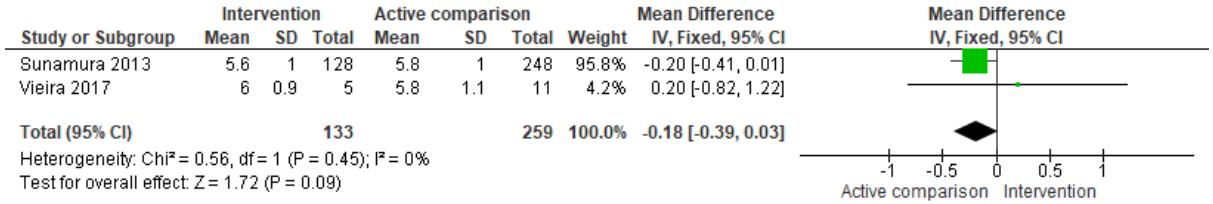
Supplementary Figure 22: Forest plot summarizing effect of maintenance CR on quality of life (QOL)- social compared with usual care

Note: the effects of maintenance CR on quality of life (QOL)- social were not meaningful (trials 3; 3 comparisons; participants=447; mean difference=-0.01, 95% confidence interval=-0.15 to 0.12; moderate-quality evidence). Heterogeneity was low.



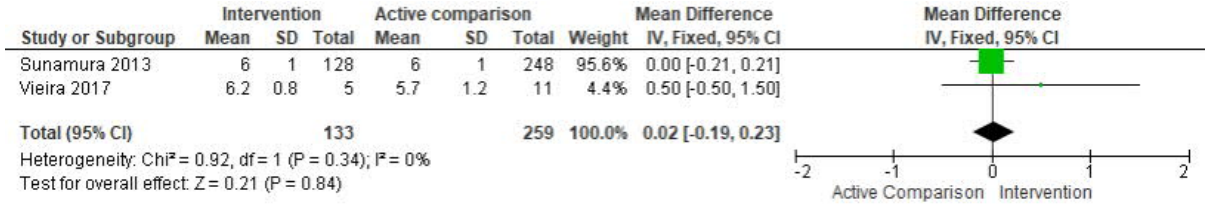
Supplementary Figure 23: Forest plot summarizing effect of maintenance CR on VO2 compared with active comparison

Note: the effects of maintenance CR on VO2 were not meaningful (trials 2; 2 comparisons; participants=514; mean difference=1.58, 95% confidence interval=-2.91 to 6.07; very low-quality evidence). Heterogeneity was moderate.



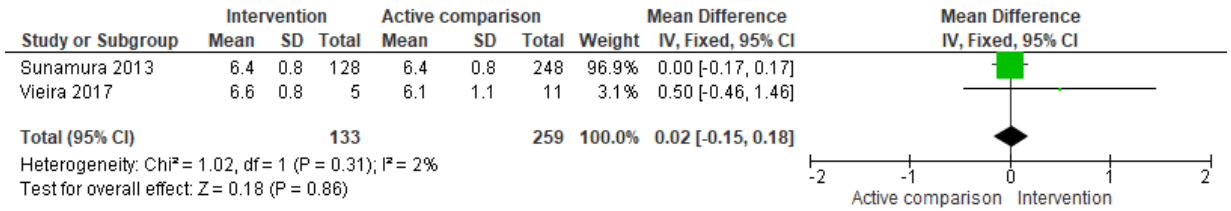
Supplementary Figure 24: Forest plot summarizing effect of maintenance CR on quality of life (QOL)- emotional compared with active comparison

Note: the effects of maintenance CR on quality of life (QOL)- emotional were not meaningful (trials 2; 2 comparisons; participants=392; mean difference=-0.18, 95% confidence interval=-0.39 to 0.03; low-quality evidence). Heterogeneity was low.



Supplementary Figure 25: Forest plot summarizing effect of maintenance CR on quality of life (QOL)- physical compared with active comparison

Note: the effects of maintenance CR on quality of life (QOL)- physical were not meaningful (trials 2; 2 comparisons; participants = 392; mean difference = 0.02, 95% confidence interval= -0.19 to 0.23; low-quality evidence). Heterogeneity was low.



Supplementary Figure 26: Forest plot summarizing effect of maintenance CR on quality of life (QOL)- social compared with active comparison

Note: the effects of maintenance CR on quality of life (QOL)- social were not meaningful (trials 2; 2 comparisons; participants=392; mean difference=0.02, 95% confidence interval=-0.15 to 0.18; low-quality evidence). Heterogeneity was low.

Appendix-1

Search Strategy: Ovid MEDLINE(R) ALL <1946 to January 23, 2020>

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1 exp Myocardial Ischemia/ (423418)

2 Cardiac Rehabilitation/ (2181)

3 exp Percutaneous Coronary Intervention/ (51985)

4 exp Myocardial Revascularization/ (90811)

5 (coronary adj3 (arterioscleros* or artery disease* or artery bypass* or atheroscleros* or angioplast* or atherectom* or syndrome*)).tw,kw. (160238)

6 ((cardiac or cardiovascular or heart) adj3 rehab*).tw,kw. (7169)

7 (angina* or stenocardia*).tw,kw. (55318)

8 ((myocardi* or heart or cardiac or coronary) adj3 (infarct* or ischemi* or ischaemi* or attack* or preinfarct* or arrest or attack or anoxia or hypoxi*)).tw,kw. (301008)

9 (coronary adj3 percutaneous adj3 (intervention* or revasculari*)).tw,kw. (32596)

10 (revasculari* adj3 (cardiac or coronary or heart or myocardi*)).tw,kw. (17620)

11 or/1-10 (613581)

12 Cardiac Rehabilitation/ (2181)

13 exp Exercise/ (188317)

14 exp Exercise Therapy/ (48853)

15 exp Exercise Movement Techniques/ (7932)

16 exp Physical Fitness/ (28822)

17 (exercis* or kinesiotherap* or kinesitherap*).tw,kw. (290539)

18 (physical* adj3 activ*).tw,kw. (115057)

19 (fit* adj3 (physical* or cardiorespiratory)).tw,kw. (14984)

20 ((cardiac or cardiovascular or heart) adj3 rehab*).tw,kw. (7169)

21 or/12-20 (483435)

22 (phase adj3 ("3" or three or third or III or "4" or four or fourth or IV)).tw,kw. (77793)

23 ((exercis* or cardiac or cardio*) adj3 maintenance).tw,kw. (1728)

24 "lifestyle management intervention".tw,kw. (8)

25 ((home* or community*) adj3 (maintenance or exercis* or CR or model*)).tw,kw. (32262)

26 or/22-25 (111498)

27 11 and 21 and 26 (713)

28 randomized controlled trial.pt. (499280)

29 random*.mp. (1333549)

30 28 or 29 (1333549)

31 27 and 30 (242)