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Comparison of hospital-based versus home-based cardiac rehabilitation for patients following an acute cardiac event

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Title: Comparison of hospital-based versus home-based cardiac rehabilitation for patients following an acute cardiac event.

Clinical Scenario: At the acute care hospital I am currently doing my clinical rotation, I have had the opportunity to work on the Cardiac Intensive Care Unit. On this floor, I have worked with many patients who have undergone open heart surgery. With this, the patients are provided with education including information on Cardiac Rehabilitation Phase II. I have found that many of these patients live over 60 miles from Reno. Many of these same patients do not attend Cardiac Rehabilitation Phase II because of the distance barrier and time commitment to drive over an hour one-way to participate in one hour's worth of a supervised exercise protocol, since all three of the cardiac rehabilitation centers in northwestern Nevada are in the Reno-Sparks area. This led me to wonder if a home cardiac rehabilitation type program exists for patients following an acute cardiac event to participate in when they live in a more rural setting. This led me to my clinical question of whether there are similar benefits in aerobic capacity and exercise adherence following completion of a cardiac rehabilitation program whether it is home-based or hospital-based.

Brief Introduction: Cardiac Rehabilitation is a multidisciplinary approach to help facilitate those who have suffered from a cardiac event such as a myocardial infarction (MI), coronary artery bypass graft(CABG), valve replacement, or stable chronic angina to recover quicker and return to a better state of health. Cardiac Rehabilitation includes monitored exercise and health education. Cardiac Rehabilitation Phase II is the second of three phases. It is a medically-supervised outpatient program that usually begins 2 to 6 weeks after being discharged from the hospital. Evidence shows that hospital-based cardiac rehabilitation programs reduce mortality rates by 27% following an MI but overall participation rates in cardiac rehabilitation are low, especially by females. An alternate to hospital-based cardiac rehabilitation – monitored home-based cardiac rehabilitation – began in the early 1980's. Whether or not one is better than the other or just as good as the other as well as reported quality of life (QOL) is still to be determined. The purpose of this critically appraised topic is to determine if there is a more convenient alternative to hospital-based Cardiac Rehabilitation with similar outcome benefits.

Clinical Question: Are there similar benefits in aerobic capacity and quality of life following completion of a cardiac rehabilitation program whether it is home-based or hospital-based?

Clinical Question PICO:

Population: Patients aged 45-75 post an acute cardiac event eligible for Cardiac Rehabilitation Phase II

Intervention: Cardiac Rehabilitation Phase II

Comparison: Home-Based Cardiac Rehabilitation

Outcome: aerobic capacity (peak VO2), QOL

Overall Clinical Bottom Line: Overall, both articles closely matched my clinical question comparing exercise capacity and quality of life in both a hospital-based and home-based Cardiac Rehabilitation program following an acute cardiac event. Both articles demonstrated that there was no clinically important difference between

groups for exercise capacity. Therefore it is inconclusive as to whether one group (hospital-based or home-based Cardiac Rehabilitation) is more effective in improving exercise capacity for patients who have had an acute cardiac event. Further studies with larger sample sizes and including a wider range of patients following an acute cardiac event need to be done for more conclusive results. At this point, home-based Cardiac Rehabilitation should be considered as an alternate to hospital-based Cardiac Rehabilitation for patients with mild to moderate cardiac risk factors who may have more difficulties attending a hospital program.

Search Terms: cardiac rehabilitation, coronary disease, coronary artery bypass graft, myocardial infarction, home-based, hospital-based, acute cardiac event, rural

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Article #1: Arthur HM, Smith KM, Kodis J, et al. A controlled trial of hospital versus home-based exercise in cardiac patients. *Medicine & Science in Sports & Exercise* 2002; 1544-1550

Clinical Bottom Line: The study demonstrated no statistical difference in regards to improving exercise capacity between a home-based Cardiac Rehabilitation program and a hospital-based program. Therefore both programs are equally as effective in improving aerobic capacity in patients who have undergone minor to moderate acute cardiac events. Subjects in the home-group reported a higher quality of life (on physical functioning component of the SF-36) than those in the hospital-group. Based on the results of this study, home-based Cardiac Rehabilitation should be sought as an alternative to hospital-based Cardiac Rehabilitation for patients with mild to moderate cardiac risk factors following an acute cardiac event.

Article PICO:

Population: 242 patients between 35 and 49 days post-Coronary Artery Bypass Graft (CABG) surgery who achieved between 40 and 80% of age and sex-predicted maximum Metabolic Equivalent (MET) level at baseline

Intervention: Hospital-based, group exercise classes (hospital)

Comparison: Individualized home exercise program with biweekly telephone monitoring (home)

Outcome: Primary Outcomes – peak oxygen uptake (VO_{2peak}); Secondary Outcomes – health-related quality of life (Medical Outcomes study 36-item Short Form Survey (SF-36)), social support (Interpersonal Support Evaluation List (ISEL))

Blinding: Blinding of group allocation of the study subjects and the exercise specialists and kinesiologists directing and supervising both the hospital and home groups did not occur. This is only a minor threat because the supervising exercise specialist/kinesiologist could have influenced the subjects as to which intervention was

better. However, the physicians who evaluated the primary outcome variable were blind to the patient's group assignment.

Controls: This study had no true control group. Patients from both the hospital group and home group were able to participate in other services such as diet, nursing, or psychological counseling offered by the Cardiac Health and Rehabilitation Center (CHRC) as part of their Cardiac Rehabilitation program.

Randomization: Subjects were randomized into the hospital group and home group using a concealed randomization process. A data analyst, who had no role in the study, prepared the randomization schedule using a blocked format. The group assignments were then sealed in opaque envelopes and opened in sequence once consent and baseline data were obtained. Both groups had similar medical histories and sociodemographic characteristics, attended the CHRC roughly 10 weeks after their CABG surgery and had the same average number of aortocoronary bypasses at baseline. There were statistically significant differences at baseline between groups in social support, resting heart rate, and weight.

Study: Two-hundred-and-forty-two patients were conveniently sampled from post-CABG surgery patients referred to the CHRC at the Hamilton Health Sciences in Hamilton, Ontario, Canada. Inclusion criteria included patients between 35 and 49 days post-CABG surgery, who achieved between 40 and 80% of age and sex-predicted maximum MET level on a progressive cycle ergometry exercise test at baseline, and were able to read and write English. Exclusion criteria included patients with recurrent angina, a positive graded exercise test (GXT), unable to attend rehabilitation therapy three times per week, unable to participate due to physical limitations, or previously participated in an out-patient cardiac rehabilitation program. The 242 patients were randomized into two groups, 120 into the hospital group and 122 in the home group. The hospital group attended 3 exercise sessions a week supervised by exercise specialists and kinesiologists at the CHRC for 6 months. Each session consisted of a 10-15 minute warm-up and cool-down of walking and stretching, with 40 minutes of aerobic exercise on either a cycle ergometer, arm cycle ergometer, track walking, stair climbing, or a treadmill in-between. Participants in this group were also recommended to train a total of 5 days per week and to keep an exercise log of their weekly activities. The home group attended a 1-hour one-on-one session with an exercise specialist at baseline and after 3 months of their exercise training. Participants were recommended to exercise five days a week including a 10-15 minute warm-up and cool-down of slow walking and stretching and 40 minutes of aerobic exercise of self-paced walking. Participants in this group were to keep an exercise log that included their daily activity, how long each session was, and their heart rate during their session. These participants were also telephoned every 2 weeks by the exercise specialist to assess adherence, monitor progress and modify the exercise protocol if needed. Exercise prescriptions for all participants were based on peak VO_2 and peak MET levels obtained during the graded-exercise test at baseline and at 3 months. At the end of the 6-month program, participants from both groups were encouraged to continue participating in their own maintenance program.

Outcome Measures: Outcomes were measured at 3 different times: at baseline, at 3-months and and 6-months of intervention. The outcome measures that were most relevant to my clinical question were peak exercise capacity and the health-related QOL (HR-QOL). The authors did not report a Minimal Clinically Important Difference (MCID) for peak VO2 or HR-QOL. Wilson RW and colleagues stated that an effect size of .3 to .5 for the SF-36 tends to be a MCID. An MCID could not be found in the literature for peak oxygen uptake in patient's attending cardiac rehabilitation.

Study Losses: Originally 275 subjects were randomly assigned to the hospital group or the home group. Sixteen of the 275 subjects withdrew from the study after being randomly assigned to a group and baseline testing took place. This was due to a change in health status making the subject ineligible for Cardiac Rehabilitation. Another 17 patients were excluded secondary to the results from their baseline GXT. Therefore, only 242 subjects were analyzed throughout the study. One-hundred-and-ninety seven subjects (hospital group: n=103; home group: n=94) participated in the 3-month testing and review of exercise prescription. At the final outcomes assessment following 6-months of intervention only 92.5% (hospital group: n=109 (89.3%); home group: n=113 (94.2%)) of subjects returned.

Summary of Internal Validity: Similarities in treatment time for the hospital group and home group and blinding of assessors to group allocation suggest moderate internal validity of this study. The authors indicated that subjects in both groups were similar at baseline in regards to medical history, sociodemographic characteristics, and number of aortocoronary bypasses, which also suggests moderate internal validity. Statistically significant differences were reported at baseline between groups for social support, weight and resting heart rate. This is a mild threat to internal validity. Other primary threats to internal validity include the lack of blinding of subjects and exercise specialists as well as the reported study losses. The lack of blinding of the subjects and exercise specialists in this study is a minor threat to internal validity because if the subjects were led to believe that participating in one group was better than the other group, this could have had an effect on the outcome. There was a study loss of 20 out of 242 subjects (hospital group: n=13; home group: n=7) at the end of 6-months of intervention. This is a minor threat to internal validity. Overall, the study suggests moderate internal validity but due to the multiple threats to internal validity presented I can only rate this study as fair.

Evidence: Outcome measures I was interested in included peak-oxygen uptake and health-related quality of life at the conclusion of the 6 month program. These data will be further analyzed in tables.

Table 1. Peak VO_2 ($mL \cdot min^{-1}$)

	Baseline	6 months	% Change
Hospital Group (n=122)	1222.1 ± 269.0	2497.2 ± 594.3*	36.2 ± 28.7
Home Group (n=120)	1260.3 ± 306.5	1433.4 ± 589.7**	30.6 ± 27.3

(significant difference from baseline *P<0.0001, **P<0.05)

The authors reported that over a six month period the peak VO_2 for both the hospital group and home group increased within groups. At 6 months, between group calculations for peak VO_2 were reported to not be significant.

Table 2. Mean difference and effect size with a 95% confidence interval (CI) of improvement from baseline to discharge at 6 months between groups for Peak VO_2 calculated based on data provided in the article.

	Peak VO2 ($mL \cdot min^{-1}$)
Mean Difference	5.6 (-2.04 to 13.24)
Effect Size	0.20 (-0.05 to 0.45)

The mean difference between groups is 5.6 $mL \cdot min^{-1}$. However, the 95% CI is wide and goes negative, which means that the results could have been reversed. The effect size between groups is 0.20, which is small (≤ 0.2)

but the CI goes negative suggesting that the home group could have improved more than the hospital group if repeated enough times. Thus the results are inconclusive and suggest that both the hospital group and home group are equally as effective in improving exercise capacity following an acute cardiac event.

Table 3. Scores for SF-36 for Physical Component Quality of Life

	6 months
Hospital Group (n=122)	48.6 ± 7.1*
Home Group (n=120)	51.2 ± 6.4*

*significant difference from baseline P<0.0001

The study reported that there were statistically significant improvements from baseline in the physical composite score for quality of life scores at six months for both the home group and hospital group. The home group had greater improvements at six months compared to the hospital group in the physical component of the quality of life scores.

Table 4. Mean difference and effect size with a 95% confidence interval (CI) of improvement from baseline to discharge at 6 months between groups for Quality of Life calculated based on data provided in the article.

	QOL (SF-36)
Mean Difference	2.6 (0.76 to 4.44)
Effect Size	0.38 (0.13 to 0.64)

The mean difference between groups is 2.6. The 95% CI is narrow with a medium effect size of 0.38 which is between the suggested MCID from the literature (0.3 to 0.5) signifying statistical significance that the home group had a greater improved quality of life compared to the hospital group.

Applicability of Study Results:

Similarity to my patients: The patient population of this article was somewhat similar to the clinical population in that their ages ranged from 53 to 74 years of age. Given that this study included only patients post-CABG, the results may or may not represent a larger group of those experiencing other acute cardiac events.

Benefits vs. Costs: All subjects regardless of group received the same amount of intervention per week including 3 sessions a week of 10-15 minutes of warm-up and cool-down as well as 40 minutes of aerobic exercise. Cardiac Rehabiliation Phase II costs roughly $35 per session. Over a 6-month period 3 times per week would equal 72 sessions. At $35 a session, total costs for hospital-based cardiac rehabilitation would be $2520. Using Medicare's 80% coverage, the patient would have a $504 co-pay. Salvetti et al. reported that the cost of a home-based cardiac rehabilitation program including bi-weekly telephone calls over a 3-month period would be approximately $210 in Brazil. Therefore, for home-based cardiac rehabilitation over a 6-month period the patient would owe $420. One caveat to this amount is these numbers are based on medical procedures in Brazil since it was difficult to find specific costs for the United States. Overall, financial costs are similar for home-based and hospital-based cardiac rehabilitation especially since not all insurance plans will cover cardiac rehabilitation.

Feasibility of Treatment: The protocols used in both hospital-based and home-based cardiac rehabilitation are easily reproducible as the authors gave sufficient data in regards to work rates and interventions. Most likely all

hospital-based cardiac rehabilitation programs have treadmills to perform the GXT as well as the walking component of the intervention. Other equipment used in this study included a cycle ergometer and an arm cycle ergometer which most facilities also have. No extra equipment was used for the home-based group. This study occurred for 6 months, whereas most insurance plans will only cover up to 36 visits which is about 3 months of cardiac rehabilitation.

Summary of External Validity: The subject sample appears to be similar to ones seen at Cardiac Rehabilitation Phase II facilities. It is hard to extrapolate the findings to a more general population of patients who have experienced other acute cardiac events because all the subjects for this study were taken from a single referral source in Hamilton, Ontario, Canada and only included those who just underwent a CABG and were considered low-risk patients.

Article #2: Jolly K, Taylor R, Lip GY, et al. The Birmingham Rehabilitation Uptake Maximisation Study (BRUM). Home-based compared with hospital-based cardiac rehabilitation in a multi-ethnic population: cost-effectiveness and patient adherence. *Health Technology Assessment* 2007; 11:35:1-18

Clinical Bottom Line: This study showed no statistical difference in regards to improving exercise capacity as measured by the incremental shuttle walk test between a home-based Cardiac Rehabilitation program and a hospital-based program. Therefore, it can be stated that both programs are equally as effective in improving aerobic capacity in patients who have undergone a myocardial infarction or revascularization within the previous 12 months. Subjects in the home and hospital-groups reported similar improvements in quality of life on the SF-12 on the physical component portion. Based on the results of this study, home-based Cardiac Rehabilitation should be sought as an alternative to hospital-based Cardiac Rehabilitation for patients following a myocardial infarction or revascularization.

Article PICO:

Population: 525 patients who had experienced a myocardial infarction or coronary revascularization within the previous 12 weeks

Intervention: hospital-based cardiac rehabilitation

Comparison: home-based cardiac rehabilitation using Heart Manual, with home visits and telephone contact

Outcome: Smoking cessation, blood pressure, total and high-density lipoprotein cholesterol, exercise capacity, psychological status, self-reported diet, physical activity, cardiac symptoms, quality of life

Blinding: Assessors were blinded to group allocation of the study subjects. However, patients and the health care staff providing the interventions were not blinded to group assignment. This is only a minor threat because the supervising health care staff could have influenced the subjects as to which intervention was better.

Controls: There was no true control group in this study but there was a comparison group that received home-based cardiac rehabilitation.

Randomization: Subjects who agreed to participate were randomized. A research nurse who was not involved in the study, based on original diagnosis, age, sex, ethnicity, and hospital of recruitment would phone the Birmingham Clinical Trials Unit (BCTU, independent group providing group allocation) and provide the subject's demographic information and then be told by BCTU the subject's allocation group.

Study: Five-hundred-and-twenty-five subjects from 4 different hospitals in the West Midlands Health Region of England were recruited for this study. Inclusion criteria included those subjects with no upper age limit who had an acute MI and were informed of their diagnosis, a coronary angioplasty with or without stenting, or a CABG operation within the previous 12 weeks. Exclusion criteria included case-note reported dementia, inability to speak either English or Punjabi, sufficient site defects that prevented them from reading the Heart Manual, severe hearing impairments, complications during their procedure or significant lesions still present, or serious persisting complications that were not stabilized by the time of randomization including cardiac arrhythmias, unstable angina, heart failure, and any other condition that would prevent safely exercising at home. The 525 subjects were randomized into two separate groups: hospital-based cardiac rehabilitation (n=262) and home-based cardiac rehabilitation (n=263). Each hospital-based cardiac rehabilitation program was slightly different with regards to duration, frequency, and physical activity. Participants at Hospital 1 met 2 times per week for 12 weeks and worked up to 25 to 30 minutes of continuous walking, rowing, or fixed cycling at 60-75% of their max heart rate. Participants at Hospital 2 met once per week for 9 weeks and activity included walking and circuit training using 6 different stations. Participants at Hospital 3 met twice per week for education and exercise for the first 4 of 8 weeks and then only once per week for exercise for the final 4 of 8 weeks. Exercise in this group consisted of 45 minutes of circuit training at 65-75% of their heart rate max. Lastly, participants at Hospital 4 met twice a week for 6 weeks. Activities included a warm-up, 40 minutes of exercise on treadmills and bicycles at 65-75% of max heart rate, followed by a cool-down. The home group was given the Heart Manual and encouraged to exercise daily following their 6-week protocol that included home-based exercises and walking. Home visits took place 7-10 days after discharge, as well as at 6 weeks and 12 weeks post-discharge. At 3 weeks post-discharge, subjects were telephoned by the program facilitators.

Outcome Measures: Outcomes for all subjects were measured at baseline, 6 months, 12 months, and 24 months after recruitment. Questionnaires about duration and intensity of their physical activity were sent to all subjects 6, 9 and 12 weeks after starting the program. The outcome measures that were most relevant to my clinical question include exercise capacity, uptake and program adherence, and quality of life. The authors did not report MCID's for exercise capacity via the incremental shuttle walk test or quality of life. A Minimal Clinically Important Difference (MCID) could not be found in the literature for the Incremental Shuttle Walk Test (ISWT) for patient's attending cardiac rehabilitation following a myocardial infarction or revascularization.

Study Losses: At the 6 month follow-up a total of 38 (home group n =16; hospital group n-22) study losses occurred. In the home group 3 died, 3 withdrew, and 10 did not allow follow-up, whereas in the hospital group 2 died, 3 withdrew, and 17 did not allow follow-up. At the 12-month follow-up an additional 12 subjects were lost (home group n=8; hospital group n=4). In the home group 4 more withdrew and 4 did not allow follow-up. For the hospital group 1 died and 3 more did not allow follow-up. At the 24-month follow-up an additional 14 subjects were lost (home group n=11; hospital group n=3). In the home group an additional 3 subjects passed away, 1 withdrew from the study, and 7 did not allow follow-up. In the hospital group only 3 more did not allow follow-up.

Summary of Internal Validity: Randomization of study subjects, blinding of assessors to randomization, and similarity of study subjects at baseline for diagnosis, cardiac risk factors, demographic characteristics and diagnosis suggest moderate internal validity. Primary threats to internal validity included lack of blinding subjects and health care staff providing treatments, differences in treatment time between groups, lack of detail in study design and low rates of study losses throughout the 2-year follow-up. Lack of blinding subjects and health care staff is a minimal threat to internal validity. The lack of detail in the study design makes it difficult to reproduce the study which is a minor threat. At the 2-year follow-up, 98% of the original subjects were accounted for; therefore, the amount of study losses is only a minor threat to internal validity. Overall, the study suggests moderate internal validity but due to the multiple threats to internal validity presented I can only rate this study as fair.

Evidence: Outcome measures that I was interested in included exercise capacity and quality of life at 6 months after recruitment. This data will be further analyzed in the following tables.

Table 5. Exercise Capacity via the Incremental Shuttle Walk Test (ISWT)

	6 months
Hospital Group (n=191)	417.4 ± 175.4
Home Group (n=198)	408.6 ± 168.2

The authors reported that the participants in both groups did not complete the ISWT at baseline and that there was no statistical significant difference between groups at 6 months on the ISWT.

Table 6. Mean difference and effect size with a 95% confidence interval (CI) of improvement at discharge at 6 months between groups for exercise capacity calculated based on data provided in the article.

	ISWT (m)
Mean Difference	8.8 (-28.15 to 45.75)
Effect Size	0.05 (-0.15 to 0.25)

The large number of subject participants were randomly assigned to groups at baseline and although baseline measurements for the ISWT were not taken, we are to assume that the groups were equal at baseline. The mean difference between groups is 8.8 meters. The 95% confidence interval is wide and goes negative suggesting that the results could be reversed if re-tested enough times. The effect size is quite small, 0.05, and the confidence interval goes negative suggesting that the home group could have improved more than the hospital group. Therefore, the results are inconclusive as to whether the hospital group or home group is more effective in improving exercise capacity in patients who have undergone an acute cardiac event.

Table 7. Scores for SF-12 for Physical Component Quality of Life

	6 months
Hospital Group (n=191)	42.56 ± 10.8
Home Group (n=198)	42.28 ± 10.9

No baseline scores were provided so change over time could not be assessed. The authors reported no statistical differences between groups on the physical component of the quality of life measure at 6 months although they did have similar scores at this time.

Table 8. Mean difference and effect size with a 95% confidence interval (CI) at discharge at 6 months between groups for Quality of Life calculated based on data provided in the article.

	QOL (SF-12)
Mean Difference	0.28 (-2.05 to 2.61)
Effect Size	0.03 (-0.17 to 0.22)

Again baseline measurements for quality of life were not taken so change over time is unable to be calculated. At 6 months after initiation of the cardiac rehabilitation program, the mean difference between groups is 0.28 which is below the suggested MCID from the literature (0.3 to 0.5) suggesting that there is no statistical significance between groups in quality of life measures. The 95% CI of -2.05 to 2.61 is larger than one would want and also goes negative. The effect size is 0.03 which is small (<0.3) with a 95% CI of -0.17 to 0.22. Although the CI is narrow, the results go negative which suggests that the results could be reversed. At this point, it is inconclusive as to which group has a more improved QOL following either a home or hospital-based cardiac rehabilitation.

Applicability of Study Results:

Similarity to my patients: The patient population in this study was similar to that of my clinical population with ages ranging from 50-70 years. The study included those patients following an MI, CABG, or a Percutaneous Transluminal Coronary Angioplasty (PTCA) thus representing a larger population of patients experiencing cardiac events compared to other studies whose PICO only includes one specific cardiac event.

Benefits vs. Costs: The article states that the cost of the home-based Cardiac Rehabilitation is similar in price to 3 of the hospital-based Cardiac Rehabilitation programs. The authors estimated the home-based program to cost about £198 and the three lower intensity programs to cost between £115–193 and the 4 hospital program that consisted of 24 sessions to cost £380. Travel costs and parking were not estimated in these figures.

Feasibility of Treatment: Interventions for all groups are both realistic and feasible treatments provided at a cardiac rehabilitation facility or as a home exercise program. Although, more detail would be needed for specific reproduction of the interventions. The length of each cardiac rehabilitation program was within the range that insurance would cover assuming that the patient's insurance covered cardiac rehabilitation.

Summary of External Validity: The subject sample appears to be similar to those you would find referred to cardiac rehabilitation following an acute cardiac event. The authors of this study used subjects from four different hospitals around the West Midlands Health Region in England making the results easier to extrapolate to a larger population.

Synthesis/Discussion:

The patient populations in both articles were similar to my patient population. The length of the cardiac rehabilitation programs in both articles ranged from 3 months to 6 months meeting anywhere from 2-3 times per week for the hospital-based groups and partaking in activities 5 days per week in the home-based groups.

Both articles demonstrated small mean differences in exercise capacity between groups at 6 months and the effect sizes were also small. The 95% CI for both calculations were wide and went negative. The mean

difference for improvement in quality of life for article 1 had a narrow CI. The small effect size was within the suggested MCID values for quality of life for article 1 but was below the MCID level in article 2. The 95% CI is narrow but goes negative. These results are summarized below in Table 9.

Table 9: Summary of mean differences and effect sizes of improvement from baseline to discharge between groups with 95% CI for Articles 1 and 2.

	Article 1	**Article 2**
	Peak VO2 ($mL \cdot min^{-1}$)	*ISWT (m)*
Mean difference for exercise capacity	5.6 (-2.04 to 13.24)	8.8 (-28.15 to 45.75)
Effect size for exercise capacity	0.20 (-0.05 to 0.45)	0.05 (-0.15 to 0.25)
	QOL (SF-36)	*QOL (SF-12)*
Mean difference for QOL	2.6 (0.76 to 4.44)	0.28 (-2.05 to 2.61)
Effect size for QOL	0.38 (0.13 to 0.64)	0.03 (-0.17 to 0.22)

Overall, in the studies by Arthur et al and by Jolly et al, patients who participated in either a hospital-based or home-based exercise program experienced statistical significant improvements in peak VO_2 and exercise capacity, respectively. In addition QOL improvements were noted in the home-based group over the hospital-based group in the article by Arthur et al. However, both studies are inconclusive concerning whether a hospital-based or home-based cardiac rehabilitation program is more effective in improving exercise capacity in acute populations of patients within 6-12 weeks of an acute cardiac event. Therefore, exercise following an acute cardiac event is a beneficial regardless of how the exercise is accomplished whether it be via a home-program or through a hospital-based program.

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