



# Study Report

## ECME Cardiac Rehabilitation Exercise Trial

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### Background

Heart disease is the most common cause of death globally. Exercise-based cardiac rehabilitation aims to improve the health and outcomes of people with heart disease. However many people with heart face barriers to cardiac rehabilitation. Home-based and online programmes have been suggested, as they may help people overcome many of the obstacles that present with traditional programmes.

### Goal

A pilot trial was conducted to examine an online exercise program for people with heart disease and compare it to a traditional in-person exercise programme.

### Procedures

Two groups took part in this study; one group undertook the exercise program in their own home, joining an online exercise class using Zoom, and the second group attended DkIT sports center for their exercise classes. Both study groups performed the exact same exercise program over an 8-week intervention period, with exercise classes delivered twice per week.

Those in the online exercise class were provided with an iPad preloaded with the ECME-CR app, which was used during the class to record their exertion levels on the Borg scale. Before and during each class, participants measured their heart rate and blood pressure using Withings devices provided to them.

A total of 18 participants with heart disease enrolled and completed the study.

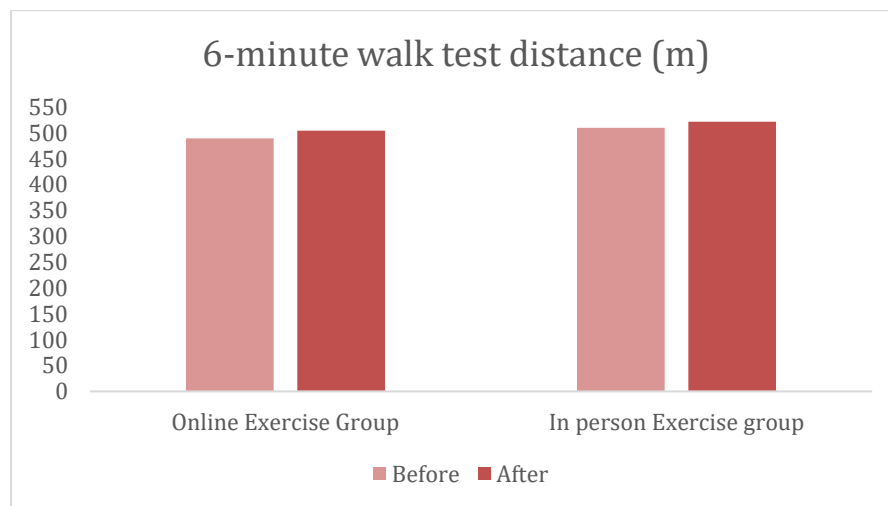


- **Online Exercise Group:** Eight participants (5 males, age:  $69.7 \pm 7.2$  years; height:  $163.9 \pm 5.4$ cm; weight:  $81.6 \pm 14.1$ kg).
- **In-person Exercise Group:** Nine participants (9 males, age:  $69.8 \pm 8.2$  years; height:  $173.8 \pm 5.2$ cm; weight:  $94.4 \pm 18.0$ kg).

Both groups completed on average 14.3 out of the 16 online classes.

## Results

All those taking part in the study were assessed before and after the exercise programme. The main measurement was physical fitness as assessed using a six-minute walking test.



Other measurements included a grip strength test and measurement of body composition, heart rate and blood pressure (BP). The SF-12 Questionnaire, which has a physical (PCS) and mental (MCS) component was used to measure general health status.

|  | Online Exercise Group |       | In-Person Exercise Group |       |
|--|-----------------------|-------|--------------------------|-------|
|  | Before                | After | Before                   | After |
|  |                       |       |                          |       |
| <b>Grip Strength – Right Hand (kg)</b> | 27.9                  | 26.8  | 35.3                     | 35.8  |
| <b>Grip Strength - Left Hand (kg)</b>  | 28.5                  | 28.6  | 34.6                     | 36.4  |
| <b>Weight (kg)</b>                     | 81.6                  | 82.9  | 95.0                     | 94.9  |
| <b>% Body Fat</b>                      | 33.9                  | 34.5  | 27.6                     | 27.9  |
| <b>Waist Circumference (cm)</b>        | 103.6                 | 103.8 | 107.0                    | 105.8 |
| <b>Resting Heart Rate (BPM)</b>        | 65.8                  | 63.4  | 60.4                     | 63.3  |
| <b>Systolic Blood pressure (mmHg)</b>  | 125.5                 | 136.3 | 145.8                    | 149.9 |
| <b>Diastolic Blood Pressure (mmHg)</b> | 78.1                  | 78.3  | 87.9                     | 82.0  |
| <b>SF12-PCS</b>                        | 43.8                  | 41.9  | 49.7                     | 46.1  |
| <b>SF12-MCS</b>                        | 57.9                  | 56.4  | 54.1                     | 57.1  |

In this trial, while both groups demonstrated improvements in the primary outcome measure of exercise capacity following the exercise programme, these improvements were neither clinically nor statistically significant. Nonetheless, this trial does provide evidence that the online delivery of cardiac exercise is feasible, and may be considered for individuals less likely to participate in traditional center-based programs.

### Acknowledgements

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