

Research

Gym-based exercise and home-based exercise with telephone support have similar outcomes when used as maintenance programs in adults with chronic health conditions: a randomised trial

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KEY WORDS

Chronic disease
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ABSTRACT

Question: What is the effectiveness of gym-based exercise versus home-based exercise with telephone follow-up amongst adults with chronic conditions who have completed a short-term exercise program supervised by a health professional? **Design:** A randomised, controlled trial with concealed allocation, intention-to-treat analysis, and blinded outcome assessment at baseline and 3, 6, 9 and 12 months. **Participants:** The participants were recruited following a 6-week exercise program at a community health service. **Intervention:** One group of participants received a gym-based exercise program for 12 months (gym group). The other group received a home-based exercise program for 12 months with telephone follow-up for the first 10 weeks (home group). **Outcome measures:** Outcome measures included European Quality of Life Instrument (EQ-5D), the Friendship Scale, the Hospital and Anxiety and Depression Scale, Phone-FITT, 6-minute walk test, body mass index and 15-second sit-to-stand test. **Results:** There was no significant difference between study groups in the primary outcome (EQ-5D visual analogue scale, 0 to 100) across the 12-month intervention period, with an estimate (adjusted regression coefficient) of the difference in effects of 0 (95% CI –5 to 4). The gym group demonstrated slightly fewer symptoms of depression over the 12-month period compared to the home group (mean difference 0.8 points on a 21-point scale, 95% CI 0.1 to 1.6). **Conclusion:** Similar long-term clinical outcomes and long-term exercise adherence are achieved with the two approaches examined in this study. Participation in gym-based group exercise may improve mental health outcomes slightly more, although the mechanisms for this are unclear because there was no change in the selected measure of social isolation or other measures of health and wellbeing. This finding may also be a Type 1 error. Further research to reproduce these results and that investigates the economic efficiency of these models of care is indicated. **Trial registration:** ACTRN12610001035011. [Jansons P, Robins L, O'Brien L, Haines T (2017) **Gym-based exercise and home-based exercise with telephone support have similar outcomes when used as maintenance programs in adults with chronic health conditions: a randomised trial.** *Journal of Physiotherapy* 63: 154–160]

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Introduction

Australian Bureau of Statistics data from 2004 to 2005 demonstrate that approximately 70% of Australians aged > 15 years were classified as sedentary or having low levels of physical activity. Physical inactivity causes a significant public health burden, with direct healthcare costs estimated at over AUD377 million per year in Australia.¹ Chronic conditions such as coronary heart disease, stroke, depression, and type-II diabetes contribute the greatest burden to the Australian healthcare system.²

One of the easiest and most effective ways of reducing healthcare costs in Australia might be older adults having greater adherence to physical activity. There are a number of interventions to enhance physical activity in populations with chronic diseases such as cardiac disease, chronic obstructive pulmonary disease and

diabetes. One such approach is to use short-term (4 to 6 weeks) supervised exercise programs. Supervised exercise programs in these populations have been shown to improve clinical health outcomes, such as quality of life, anxiety, depression and exercise tolerance.^{3–5} However, there is evidence that exercise adherence declines after the programs are completed, with many people ceasing altogether. A randomised, controlled trial with 109 participants with chronic obstructive pulmonary disease identified that approximately 50% of older adults ceased exercise within 9 months of completing a supervised exercise program.⁶ Unfortunately, the benefits of exercise are rapidly lost when exercise is ceased,⁷ highlighting the need to promote ongoing participation. Hence, there is a need to identify ways of promoting ongoing physical activity following completion of a short-term supervised exercise program.

Strategies to encourage ongoing participation frequently employ behaviour change techniques. Three main approaches have been used: home-based exercise programs with no follow-up,⁸ gym-based exercise programs,^{9–14} or home-based exercise programs with telephone follow-up.⁶ Home-based prescribed physical activity programs with telephone support are thought to work by embedding exercise into daily routine, and avoiding the need for travel to an exercise centre. However, they may fail by not facilitating inter-personal connections between the individual and his/her peers, and by the prescriber having limited capacity to monitor the person's physical progress. Structured gym-based programs may have an advantage over home-based programs, by controlling the amount and quality of direct training and supervision, allowing personal attention and immediate verbal feedback from the exercise facilitator. Motivation for exercise may also be enhanced via social support and interaction between exercise group members with similar health issues.¹⁵ However, there are conflicting findings across these studies as to which of these follow-up approaches is more effective, and none have yet undertaken a head-to-head comparison in a regional, suburban, single-site, community health centre.

The aim of this study was to compare the effectiveness of a home-based exercise program with telephone follow-up to a gym-based follow-up program amongst adults with a variety of chronic conditions and who had completed a short-term exercise program supervised by a health professional.

Therefore, the research question for this randomised, controlled trial was:

What is the effectiveness of gym-based exercise versus home-based exercise with telephone follow-up amongst adults with chronic conditions who have completed a short-term exercise program supervised by a health professional?

Method

Design

This was a randomised, controlled trial with concealed allocation, and blinded outcome assessments conducted at baseline (ie, at the completion of the short-term supervised exercise program), 3, 6, 9 and 12 months. Prior to enrolment, all participants received an initial health assessment (also used to obtain participant baseline demographic data) from an exercise physiologist and then completed a 6-week supervised exercise program at a community health service. This consisted of 1-hour group exercise sessions, with participants encouraged to attend three sessions per week. Each participant was provided with a home-based exercise program at the conclusion of the supervised exercise program. Exercise physiologists collected baseline data for this trial at the discharge assessment of the short-term supervised program. Patients were then randomised to one of the two 12-month intervention programs. Randomisation involved the investigator opening a sealed, opaque envelope containing the random allocation sequence, which was developed by a separate investigator with no knowledge of participants' baseline results. This sequence was set out in permuted blocks of 4, 6 and 8, and was stratified by the participant's primary chronic disease diagnosis type (pulmonary, musculoskeletal, diabetes, other). A blinded research assistant conducted the reassessments at 3, 6, 9 and 12 months. Participants were not blinded to group allocation; therefore, their self-reported outcomes could not be considered to be blinded. However, the research assistants who administered the physical tests were blinded.

Participants, therapists and centres

Participants were recruited from a pool of adults who had completed a 6-week exercise program at the Cardina Casey

Community Health Service, South East Melbourne, Australia. Those referred to this service typically have: multiple co-morbidities; poor or declining mobility; physical de-conditioning; or a combination of these problems. Mixed population rehabilitation groups are a potentially useful mechanism of service delivery for regional areas where throughput within a specific diagnostic grouping is insufficient to justify a disease-specific rehabilitation program (eg, pulmonary rehabilitation). We excluded people with acute psychiatric impairment or cognitive impairment that made the person unsuitable for participation in a gym-based or home-based exercise program, as determined by health service staff. Partners and/or couples were also excluded from participation.

Intervention

Gym-based exercise program

Participants allocated to the gym-based intervention were given a 12-month, individualised, exercise program. An exercise physiologist from the community health service supervised this at the gym from Monday to Friday for 2 hours per day. This meant that there was a person present at the gym with whom the participant already had a pre-established relationship from when they had completed the initial short-term supervised exercise program. Participants were encouraged to attend during the times that the exercise physiologist attended the gym. However, participants were able to independently attend the gym during off-peak times (Monday to Friday 08:00 to 16:00). Each participant was encouraged to complete a 1-hour exercise session, three times per week. They were required to pay the standard casual entry fee of AUD5 per visit to the gym. The exercise prescription adhered to the American College of Sports Medicine guidelines for chronic health conditions.¹⁶

The prescribed exercise included strengthening, aerobic and stretching exercise components. The strengthening component involved 40 minutes of six to eight strength training exercises for the upper and lower body (eg, leg press, calf raise, bicep curl, triceps push-down, lateral pull-down, chest press or scapula retraction) using pin-loaded resistance equipment, unless contraindicated. Participants were prescribed a two-set repetition maximum per exercise set at a moderate intensity of approximately 60% of their 10-repetition maximum. The aerobic component of the exercise involved up to 15 minutes of stationary bike, treadmill or cross trainer. The rating of perceived exertion scale was used to monitor a safe 'moderate' intensity.¹⁷ The stretching component involved 5 minutes of upper and lower limb stretching (eg, pectoral, shoulder, calf, hamstring and quadriceps) with two repetitions of each static stretch prescribed for 30 seconds. The healthcare professionals providing the intervention were trained in the Health Coaching Australia model that uses motivational interviewing techniques, solution-focused coaching and cognitive behavioural therapy techniques to identify techniques and address behavioural, emotional, situational and cognitive barriers to exercise adherence.¹⁸

Home-based program with telephone support

Participants allocated to the home-based intervention were also given a 12-month, individualised, exercise program. Each participant was encouraged to complete a 1-hour exercise session, three sessions per week, at home. The home-based exercise program was supervised via five telephone calls over the first 10 weeks, approximately 25 to 30 minutes in duration. The total time in minutes to complete the five phone calls for each participant was comparable to that spent supervising each participant in the gym over a 12-month intervention period. The exercise physiologist supervising the telephone intervention was also trained in the Health Coaching Australia Model. The same exercise physiologists who provided supervision for the gym-based program also provided the supervision for the home-based program, ensuring equivalence in the experience and educational background of the providers of each of these interventions.

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