Review: exercise training in patients with heart failure is safe


Clinical impact ratings GP/FP/Primary care ****** IM/Ambulatory care ****** Cardiology ******

Q Is exercise training safe in patients with heart failure?

METHODS

Data sources: Medline (1966 to August 2003), Medscape (1979 to August 2003), the Cochrane Controlled Trials Registry (1979 to August 2003), hand searching relevant journals, and bibliographies of identified articles.

Study selection and assessment: clinical trials comparing exercise training with no exercise training in patients with ejection fraction <40% and data were presented on mortality or adverse events. Studies examining the effects of a single exercise session were excluded.

Outcomes: mortality rates and adverse events (incidents causing withdrawal from the exercise program, including hospital admission).

MAIN RESULTS

81 studies met the inclusion criteria (30 parallel group randomised controlled trials [RCTs]; 9 randomised crossover trials; 5 non-randomised controlled trials; and 37 cohort studies). The 30 parallel-group RCTs included 1197 patients. Among these RCTs, training duration ranged from 15 minutes 3 times/week for 8 weeks to 100 minutes 7 times/week for 8 weeks. Follow up ranged from 4 weeks to 192 weeks. Groups did not differ for adverse events or all cause mortality (table). For all included trials, no exercise related deaths occurred in any patients during >60 000 hours of exercise training. In 57 trials that measured maximal oxygen uptake, exercise training showed a mean increase of 17% (95% CI 14% to 19%).

CONCLUSION

Exercise training is safe in patients with heart failure and increases peak oxygen consumption.

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Sources of funding: Medical Benefits Fund, Australia and Heart Foundation of Australia.

Exercise training v no exercise training in patients with heart failure (30 parallel group randomised controlled trials)*

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Number of trials (number of patients)</th>
<th>Odds ratio (95% CI)</th>
<th>RRR (CI)</th>
<th>NNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adverse events†</td>
<td>14 (790)</td>
<td>0.83</td>
<td>16%</td>
<td>Not</td>
</tr>
<tr>
<td>All cause mortality</td>
<td>11 (729)</td>
<td>0.71</td>
<td>(0.50 to 1.39)</td>
<td>(36 to 49)</td>
</tr>
<tr>
<td>Combined endpoint‡</td>
<td>17 (871)</td>
<td>0.98</td>
<td>(0.61 to 1.32)</td>
<td>(27 to 36)</td>
</tr>
</tbody>
</table>

*Abbreviations defined in glossary: RRR, NNT, CI calculated from odds ratios and control event rates in article using a random effects model. Follow up ranged from 4 to 192 weeks.
†Incidents causing withdrawal from the exercise program, including hospital admission.
‡Adverse events or mortality.

Commentary

Recent data indicate that over 13 million people in the US have CHD, and over 5 million people have a diagnosis of congestive heart failure (CHF). With this burden of disease, CHF is the most common discharge diagnosis for hospitalised Medicare patients. One of the cornerstone therapies for these patients is regular exercise. Paul Dudley White, MD, one of the founders of the American Heart Association, spent his career touting the benefits of exercise. In his autobiography he comments, “It doesn’t much matter what exercise you take, provided it... suits you in age, strength, aptitude, and experience.”

The early work of Dr. White and others has led to the evolution of modern cardiovascular care to involve formal cardiac rehabilitation programmes. Since their development, the safety of these programmes has been well established and significant adverse events are extremely rare.

In their review, Smart and Marwick address exercise training in patients with CHF, while Taylor and colleagues review exercise rehabilitation for patients with CHD. Both are comprehensive reviews of the literature and incorporate many pertinent contemporary studies. Benefits of exercise training in these patient populations include improved peak rate of oxygen consumption (VO2) and cardiac output, efficiencies in oxygen consumption, and decreased rate pressure product.

Accordingly, exercise capacity improves and the threshold for development of cardiac symptoms increases. Along with improvements in these exercise and haemodynamic variables, several neurohormonal markers have been shown to improve in patients with CHF. Decreased levels of aldosterone, angiotensin, natriuretic peptides, and vasopressin are seen. With the widespread use of cardiac rehabilitation in the CHD and CHF patient populations, other anticipated benefits would include improved quality of life and decreased rates of subsequent hospital admissions. On this basis, it is the rare patient with CHD or CHF who should not be considered a candidate for cardiac rehabilitation.

In this era of cost containment, payment for the services offered by rehabilitation programmes becomes an issue. A large percentage of patients with CHD or CHF are covered by Medicare. The current Medicare policy covers supervised rehabilitation for patients who have a documented diagnosis of acute myocardial infarction within the preceding 12 months, coronary bypass surgery, or stable angina pectoris. Thus, many patients with CHD have coverage for a rehabilitation programme. At present, however, formal rehabilitation programmes for patients with CHF do not receive reimbursement through Medicare. This policy is being reassessed. It is hoped that systematic reviews of the literature as presented here will facilitate policy changes so that the benefits of exercise rehabilitation for more patients with CHF and CHF can be realised.

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