Scottish Government Health Directorates Chief Scientist Office

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FOCUS ON RESEARCH

Maximising physical function in later life: a 2-centre randomised controlled trial of progressive resistance exercise training in combination with ACE inhibition

Researchers
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Aim
Our aim was to determine whether combining ACE inhibitors pills with exercise training would boost the benefits achieved from exercise alone in older people with mobility problems. ACE inhibitors are medicines used to treat high blood pressure and heart conditions, which may also benefit muscles.

Project Outline/Methodology
In a two centre (Tayside and Fife) randomised controlled trial, all participants received 10 weeks of therapist-led supervised group exercise twice per week, followed by 10 weeks of telephone encouragement to exercise at home. All participants were randomised to receive either 4mg Perindopril (an ACE inhibitor pill) daily or a matching dummy (placebo) pill for 20 weeks.
We included people aged 65 years or over who had self reported difficulties with mobility and who had a short physical performance score (SPPB) of less than or equal to 10.
We excluded people who were already taking ACE inhibitors, those with contraindications to ACE inhibitors, those with heart failure, those who regularly participated in exercise training, and those who were wheelchair bound.
The main outcome was the change in distance walked in 6 minutes from baseline over 20 weeks. Other outcomes were: Change in measure of physical function using SPPB, leg strength and hand grip strength. Change in quality of life and in self reported physical ability using the Functional limitation profile.

Key Results
170 participants, with an average age of 76 years, 42% male were randomised. Participants attended an average of 18 out of 20 exercise sessions and pill taking was excellent at 99%. 160/170 (90%) people completed the study; 10 participants withdrew, 3 in the ACE inhibitor with exercise group and 7 from the exercise with placebo group. 5 withdrawals were due to adverse events (all in the exercise with placebo group).
The distance walked in 6 minutes increased by an average of 32.9m at 20 weeks. However the amount of improvement seen was similar in both groups (29.6 m in the ACE inhibitor with exercise group vs. 36.4 m in the exercise with placebo group), so we found no advantage of the ACE inhibitor plus exericse over the exercise on its own group. Although improvements in the average SPPB score and quality of life were seen in the whole population, there were no differences between the ACE inhibitor with exercise and exercise with placebo groups in any of the other outcomes.

Conclusions
The addition of an ACE inhibitor to an exercise training programme for older people did not confer an additional benefit over and above that achieved from exercise on its own. ACE inhibitors were well tolerated. Exercise training was safe and increased physical function to a similar extent as we have previously seen with an ACE inhibitor.

What does this study add to the field?
This is the first study in man to examine the combination of ACE inhibitors and exercise training. We found no additional benefit from adding ACE inhibitors to exercise training on physical function in the short term (20 weeks). We have previously found that ACE inhibitors improve physical function in older people with difficulties with mobility when not combined with exercise. Our current trial results show conflicting data in regard to the effects of ACE inhibitors on physical function in older people.

Implications for Practice or Policy
Our findings do not support a role for ACE inhibitors to augment the effects of exercise training in older people.

Where to next?
We are undertaking a systematic review synthesising the data on the effect of ACE inhibitors on physical function on older people. This is required to resolve conflicting findings from different studies.

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