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Press Release relating to a poster or oral session

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More evidence for the benefit of exercise in cardiovascular disease – and even in heart failure

In one study, exercise is associated with better survival rates than PCI

Exercise is one of eight preventive measures identified by the European Heart Health Charter and features prominently in the scientific programme of EuroPRevent 2009, the congress of the European Association of Cardiovascular Prevention and Rehabilitation.1 EuroPRevent 2009 takes place in Stockholm, Sweden, on 6-9 May. In new studies presented at the congress exercise is shown to improve markers of heart disease in patients following coronary artery bypass surgery (CABG), to improve event-free survival rate in coronary patients better than stent angioplasty, and to improve markers of disease in heart failure patients, a group usually thought amenable to little more than palliative care.

1. In rehabilitation following CABG
A study performed by Dr Tomasz Mikulski and colleagues from the Medical Research Centre in Warsaw, Poland, found that aerobic training using a cycloergometer (a static bike whose pedal load can be set and user performance measured) improved the physical capacity of cardiac patients following CABG, with reduction in the levels of lipids and markers of inflammation. Sixty optimally treated patients, with a mean age of 56 years and an average of two months following heart surgery, were randomised to either six weeks of aerobic training three times per week on the cycloergometer or to a non-exercise control group. At the end of the study period only the exercise group showed improvement in exercise duration and maximum workload. Other measures taken during a stationary handgrip test – heart rate, blood pressure and stroke volume – were all improved in the exercise group, as were some metabolic markers such as LDL cholesterol.

2. In comparison to PCI in patients with stable coronary disease
Percutaneous coronary intervention (PCI) with balloon angioplasty and stent is now the gold standard of care in most types of acute coronary events (heart attack). But its role in stable coronary disease – such as angina – is less clear, and in such cases regular physical exercise training has been shown to improve work capacity, cardiac function, and event-free one-year survival. A pilot study, to be reported from Leipzig, Germany, has now compared event-free survival rate in 101 stable angina patients either treated “conservatively” with an exercise programme or with PCI. After five years of follow-up, results from this pilot randomised trial showed that daily exercise training as part of “optimal medical treatment” leads to a better event-free survival rate than PCI with stent angioplasty. In the “conservative” exercise group, 63% of patients met the event-free survival criteria, but only 40% in the PCI group. Within the five years of follow-up, 36 cardiovascular events (including heart attack, stroke and death) had occurred in the exercise group in comparison to 55 in the PCI group.

3. In heart failure
Heart failure, by far the most prevalent chronic cardiac condition, is also one of the most difficult to diagnose and treat. Its symptoms of breathlessness, exercise intolerance and fluid build-up in the abdomen and lungs are often mistaken for mere “old age” and left untreated. Now, however, another study from Leipzig, Germany, suggests that a moderate exercise programme four times daily for four weeks can improve the function of (endothelial) cells lining the circulatory system; endothelial dysfunction is a key event in the progression of atherosclerosis and heart failure. Each exercise session comprised a short warm-up routine followed by 10-20 minutes cycling under supervision. Fifty patients with stable heart failure were randomised to the exercise programme or to a control group; each of the four daily exercises was at 60-70% of maximal aerobic capacity.

Endothelial function was assessed by ultrasound measurement of arterial diameter, which is predominantly dependent on the release of nitric oxide from the endothelium and represents a well accepted predictor of outcome in heart failure. Results showed that in both young and older heart failure patients the four weeks

exercise programme was effective in improving endothelial dysfunction, reflecting, says investigator Dr Marcus Sandri from the University of Leipzig, “the potential for rehabilitation in this patient group”. No improvements were seen in the control group.

Dr Sandri also noted that the beneficial effect was seen as much in older subjects as in younger. “The effects of exercise were not diminished in our older heart failure patients,” he says, “which suggests that exercise as a treatment might be just as effective in older patients as younger.” Dr Sandri added that the study also measured the numbers of endothelial progenitor cells, which increased in number in those patients randomised to the exercise programme. Thus, while the effect of exercise appeared to improve arterial blood flow through vasodilation, it may also be that the increased number of progenitor cells had a regenerative effect on diseased endothelial tissue.

Although rest and palliative care have been traditionally prescribed for patients with heart failure, it has been seen in several recent studies that physical exercise training can improve functional capacity in patients with heart failure. The effects of exercise have been seen in improved exercise capacity, quality of life, and biomarkers of disease and even survival.

This latest study on the effect of exercise on endothelial function will be presented – along with the other two highlighted - at a session on “exercise training in coronary artery disease” on Friday 8 May at EuroPRevent 2009.

- Ends –

Notes:

1. The eight areas for disease prevention in the European Heart Health Charter are smoking, blood pressure, cholesterol, physical activity, diet, obesity, glucose metabolism, and stress.
2. The European Association for Cardiovascular Prevention and Rehabilitation (EACPR) is a Registered Branch of the European Society of Cardiology and aims to be a coordinating stronghold within the ESC for all activities in the field of preventive cardiology and rehabilitation.
3. Cardiovascular disease is the main cause of mortality in Europe, responsible for more than 2 million deaths per year. Many of these deaths could be prevented with the full adoption and application of prevention policies.
4. The full scientific programme of EuroPRevent 2009 is available at http://spo.escardio.org/Welcome.aspx?eevtid=30
5. More information on EuroPRevent 2009 is available from the ESC's press office at press@escardio.org OR 00 33 492 94 86 27.