

Exercise slows muscle wasting from age and heart failure

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Exercise can counteract muscle breakdown, increase strength and reduce inflammation caused by aging and heart failure, according to new research in *Circulation*, an American Heart Association journal.

The benefits for [heart failure patients](#) are similar to those for anyone who exercises: there's less muscle-wasting, and their bodies become conditioned to handle more exercise.

Age of the patients didn't matter, either, researchers found.

"Many [physicians](#) – and insurance companies – still believe that cardiac rehabilitation does not really help in old age. This study clearly falsifies this belief," said Stephan Gielen, M.D., lead co-author and Deputy Director of Cardiology at the University Hospital, Martin-Luther-University of Halle, Germany.

Between 2005 and 2008, researchers recruited 60 [heart-failure](#) patients and 60 healthy volunteers. Half of each group was 55 years and younger and the other half, 65 years and older, resulting in an average age difference of 20 years between the groups. Half the participants in each age group were randomly assigned to four weeks of supervised aerobic training or no exercise. Researchers took muscle biopsies of all participants before and after the intervention.

In both age groups, four training sessions of 20 minutes of aerobic exercise per day, five days a week plus one 60 minute group exercise

session was associated with increased muscle force endurance and oxygen uptake. Heart failure patients 55 and under increased their peak oxygen uptake by 25 percent, while those 65 and over increased it by 27 percent.

Using biopsy results, researchers found that levels of a muscle protein indicating [muscle breakdown](#), known as MuRF1, were higher in participants with heart failure than in their healthier counterparts. However, exercise reduced MuRF1 and reduced muscle [inflammation](#), measured by levels of a protein called TNF-alpha.

The strength of participants' leg muscles was measured before and after the exercise. Younger and older heart failure patients increased muscle strength after the four-week exercise regimen. Muscle size was unaffected.

These findings offer a possible treatment to the muscle breakdown and wasting associated with heart failure and suggest that exercise is therapeutic even in elderly heart failure patients. The findings also suggest an avenue for drug development to slow muscle breakdown in heart failure patients.

"Exercise switches off the muscle-wasting pathways and switches on pathways involved in muscle growth, counteracting muscle loss and [exercise](#) intolerance in heart failure patients," Gielen said.

According to the [American Heart Association](#), about 5,700,000 Americans age 20 and older have heart failure.

"Over the last three decades, hospital admissions for heart failure have increased fourfold and will continue to do so, due chiefly to the aging of the population," Gielen said. Estimates of costs vary, but are in the tens of billions of dollars per year in the United States alone, researchers said.

Provided by American Heart Association

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