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Media Release

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Exercise boosts artery health in middle-aged and older men, not testosterone therapy - new Australian study

A 12-week exercise program improved artery health in middle-aged and older men, while testosterone treatment alone provided no benefits to artery health and function, a new study by The University of Western Australia has found.

The study examined the effect of exercise training and testosterone treatment on artery function in 78 men, aged between 50 and 70, who had low-to- medium testosterone levels at the start of the study. They had no history of cardiovascular disease and a waist measurement of 95 centimetres or more, which is above the recommended level for good health.

The research was published in [Hypertension](#), an American Heart Association journal, and funded by a Heart Foundation Vanguard award.

As men age, their testosterone and physical activity levels decrease while their risk of developing cardiovascular disease (CVD) increases. CVD includes heart attack and stroke. Previous studies have established that testosterone therapy can help build muscle mass and strength in men, but it is not clear if testosterone improves artery health and function.

The new study found that exercise training was more effective than testosterone for improving vascular function, according to study author, Daniel Green, a Winthrop Professor at The University of Western Australia.

Professor Green said artery function was a determinant of future cardiovascular risk.

Participants completed a supervised exercise program using stationary bikes and resistance training machines.

They were randomly assigned to four groups: 21 men received a testosterone cream that was applied to the skin daily, along with aerobic and strength training two to three times a week; 18 men received testosterone cream with no exercise training; 19 men received a placebo with exercise training; and 20 men received a placebo and no exercise training.

Using ultrasound scans at the beginning and end of the trial, and other testing, the researchers monitored the artery diameter responses to changes in blood flow to determine artery health and function.

Key findings:

- Artery function improved by 28 per cent in the group who did exercise training without testosterone
- Artery function improved by 19 per cent in the group who received a combination of testosterone and exercise
- There was no improvement in artery function in the group that received testosterone therapy without exercise training

- Exercise was more effective in reducing body fat and developing lean body mass than testosterone.

Professor Green said prescriptions for testosterone had increased exponentially in many countries in recent years.

“In the absence of any new clinical indications, testosterone sales have increased 12-fold globally, from \$150 million in 2000 to \$1.8 billion in 2011. This occurred despite ongoing controversy regarding testosterone supplementation and cardiovascular risk.”

Endocrinologist and Professor at UWA’s Medical School, Bu Yeap, said there had been a sharp increase in sales among men with no proven pituitary or testicular disease.

Professor Yeap attributed this to an “unproven belief that testosterone therapy was rejuvenating and might have anti-ageing effects.”

He advised doctors to “apply caution when prescribing testosterone if the aim is to improve artery function and health”.

The Heart Foundation’s Director of Active Living, Adjunct Professor Trevor Shilton, said the study added to our understanding of how physical activity supports cardiovascular health.

“We know that being active helps to delay, prevent and manage many chronic conditions, such as heart disease, diabetes and some forms of cancer. It can help prevent and reverse weight gain, high blood pressure and cholesterol – all of which contribute to heart disease and stroke.

“Adults are advised to aim for 150 minutes of moderate physical activity or 75 minutes of vigorous physical activity each week – or a combination of the two – and add strength training at least twice a week.

“This new study explores the effects of physical activity and testosterone on the arteries themselves and lays the foundation for larger studies in this area.”

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About the Heart Foundation

The Heart Foundation is a not-for-profit organisation dedicated to fighting the single biggest killer of Australians – heart disease. For over 60 years, it has led the battle to save lives and improve the heart health of all Australians. Its sights are set on a world where people don’t suffer or die prematurely because of heart disease. For heart health information and support, call the Heart Foundation Helpline on 13 11 12. To find out about the Heart Foundation’s research program or to make a donation, visit www.heartfoundation.org.au