

New study sheds light on novel exercise treatment for common form of cardiovascular disease

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Weight training—also called resistance training—can help people with peripheral artery disease reduce painful symptoms like muscle cramps during walking, a study by UNSW medical researchers recently published in the *British Journal of Sports Medicine* has shown.

In people with [peripheral artery disease](#) (PAD), a build-up of plaque in the arteries—caused by [high cholesterol](#), nicotine and other [cardiovascular disease risk factors](#)—leads to narrowing of the arteries and ultimately reduced blood and oxygen supply to the legs.

Once the [disease](#) progresses, patients can develop a cramping pain while walking, which is quickly relieved by rest. This leads to patients avoiding walking and other forms of exercise that cause the pain, resulting in increased sedentary behaviors, and increased risk of developing further vascular disease, including to the arteries of the heart (leading to [heart attack](#)) and brain (leading to

stroke).

"One of the biggest issues is that peripheral artery disease is asymptomatic to start and only gets diagnosed when patients present to their doctor with the cramping pain. This means it has already progressed," says lead author Dr. Belinda Parmenter, Accredited Exercise Physiologist and Deputy Head of UNSW's School of Medical Sciences.

"Once symptoms kick in, they can often be really painful—we call the main symptom intermittent claudication. Essentially, it means people experience severe [muscle cramps](#) when they are physically active, like when walking, which is then relieved by rest."

Upon diagnosis, exercise is typically the number one and [initial treatment](#) prescribed, with interval walking the current gold standard for improving symptoms.

"Doctors' main recommendation for people with PAD is to walk, as it is the most effective treatment for symptoms of the disease. However, this prescription often means that a lot of patients can't and don't comply, due to the pain the walking causes them," Dr. Parmenter says.

Sometimes, patients are dealing with the side effects of a stroke, amputations, or pain that can be so severe that they simply can't walk—so Dr. Parmenter saw an opportunity to explore additional treatment options.

"I actually got the idea to study resistance [training](#) from my dad—he's a vascular surgeon who said to me "What do I do about my patients who can't walk? How can I help them?""

Challenge accepted: Dr. Parmenter started researching the potential benefits of [weight training](#) for PAD. A trial she ran showed that high-intensity resistance training was effective for improving walking ability in patients with PAD—and this recent meta-analysis reinforces that finding.

"It's really exciting—we found that high-intensity [weight](#) training improves people's walking ability. The results indicated that it was effective at improving all forms of walking—both graded treadmill and flat ground walking. It improved how far someone could walk before the pain kicked in, and their total walking distance," she says.

"Crucially, weight training allows patients to train the muscle groups that aren't affected by claudication, so they can avoid cramps altogether during the sessions."

Masking heart disease

Dr. Parmenter says that PAD can also mask heart disease—often, people with PAD don't walk much, or complete other forms of aerobic exercise because of the pain. If they do, the leg pain often stops them before they work hard enough to elicit any symptoms of heart disease that may arise with more intense activity.

"The leg pain often stops them during any cardiac stress testing protocols too, so we don't ever get to see how the heart is coping under higher loads," Dr. Parmenter says.

"This is another reason why weight training is so powerful for patients with PAD—it helps to improve their ability to walk and complete other forms of exercise. Once they can work a bit harder, we often end up diagnosing heart disease, and can intervene before it's too late."

In one patient's case, Dr. Parmenter was able to build muscle strength and endurance and improved her patient's walking abilities through high intensity resistance training. Once the patient could work a bit harder, she then started experiencing unusual shortness of breath and chest tightness at the higher walking work loads. The appearance of the symptoms led to a diagnosis of ischemic heart

disease—she ended up needing a quadruple bypass, but has recovered well and is now fitter than ever.

"If we didn't improve her walking capacity, we would have never known about the heart disease," Dr. Parmenter says.

Now, the researchers hope that their findings will soon be reflected in treatment guidelines for PAD.

"The evidence is now there for doctors to refer their patients to the gym for a lower body weight training program in order for them to improve their claudication and mobility," Dr. Parmenter says.

"Our previous research led to [resistance training](#) being included in American and Australian guidelines for the treatment of PAD, in addition to walking—now that we have this much stronger evidence, we hope that it will be included as an option that can be used instead of walking, as well," Dr. Parmenter says.

Benefits of weight training for everyone

Beyond PAD, weight training has multiple benefits for [heart](#) health and has been associated with a 30-40 percent reduction in death from all causes, with a slightly stronger association for women.

"Weight training has also been shown to improve each of the biological risk factors for cardiovascular disease, including overweight and obesity," Dr. Parmenter explains.

"It increases muscle mass which leads to a higher resting metabolic rate, meaning it's easier for your body to burn more calories at rest, and therefore maintain a healthy weight.

"Weight training is also related to reduced blood pressure, improved insulin sensitivity and therefore blood glucose control, and reduced triglycerides. We recommend to complete at least 2 sessions a week of whole body training at a moderate to high intensity."

More information: Resistance training as a treatment for older persons with peripheral artery disease: a systematic review and meta-analysis.

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