

Study provides new insight into different forms of heart failure

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Dr. Mark Haykowsky, Moritz Chair of Gerontology Nursing Research in the College of Nursing and Health Innovation. Credit: University of Texas at Arlington

Using a novel noninvasive technique, a team of researchers led by a professor at the University of Texas Arlington's College of Nursing and Health Innovation has been able to measure oxygen consumption in the legs of heart failure patients, providing additional insight into this syndrome.

The results of the study were published in the journal *PLOS One* and could bode well for the future treatment of patients. Mark Haykowsky, the college's Moritz Chair of Gerontology Nursing Research, was the senior author of the journal article.

For the study, the researchers recruited 10 older heart failure patients with either big, dilated hearts that do not pump blood well or big, stiff hearts that do not relax properly after [exercise](#). Both types of patients have high mortality rates.

Typically, measuring leg [blood flow](#) and oxygen extraction and consumption is a tedious process. It requires the insertion of a catheter into an artery and vein.

The team developed a technique to measure leg blood flow and oxygen consumption using magnetic resonance imaging technology. Following four minutes of constant knee extension exercise, the researchers measured leg oxygen consumption and its determinants during the recovery period.

"We wanted to see if these two groups differ in their leg [oxygen](#)

[consumption](#) in the recovery period after exercise, and if so, why this occurred," said Haykowsky.

Their measurements showed that there was indeed a difference between the two groups. Leg blood flow and oxygen uptake recovery took longer in patients with dilated hearts.

"This study is an important breakthrough because we were able to distinguish between different groups of heart failure patients," said Haykowsky. "This could have important implications for exercise rehabilitation for [heart failure patients](#). If we're able to differentiate between these heart failure groups then in the future we could target therapies aimed at increasing blood flow to their muscles and improve their exercise capacity. Fatigue and exercise intolerance are cardinal features in heart failure."

Anne Bavier, dean of the College of Nursing and Health Innovation, said this study further positions UTA as an innovative leader in the battle against heart disease and could bring hope to millions of people.

"This study is a critically important weapon in the battle against this ailment," said Bavier. "It suggests that there are different underlying pathologies among groups of patients with various forms of [heart failure](#) and it opens up the possibility of therapies specifically targeted at these groups. "

Provided by University of Texas at Arlington

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