

Signs of early heart failure revealed in patients with type 2 diabetes

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Adults with type 2 diabetes that have no history, signs or symptoms of heart problems have been shown to have severely limited exercise capacity, according to researchers at the National Institute for Health Research (NIHR) Leicester Biomedical Research Centre. Such limitations place them at impending risk of developing heart failure, according to the team who led the study.

Researchers studied the hearts of 247 people who had been diagnosed with type 2 diabetes between 2.5 and 10 years ago. A control group of 78 people without type 2 diabetes was also recruited to act as a comparison. Over one third of volunteers were from a black or South Asian background, making the sample representative of the local community.

Using state-of-the-art cardiac [magnetic resonance](#) imaging (MRI) and ultrasound the researchers spotted subtle impairments in the [blood flow](#) to the [heart muscle](#) and in the ability of the heart to fill with, and circulate blood around, the body of those volunteers with type 2 diabetes.

Participants also had their fitness levels measured using cardiopulmonary exercise testing—a non-invasive method used to assess the performance of the heart and lungs during exercise, usually carried out on an exercise bike.

Dr. Gaurav Gulsin, BHF Clinical Research Training Fellow at the University of Leicester and lead for the study, said: "Our results showed

that even when factoring in age, sex, ethnicity and smoking status, subtle heart impairments contributed to strikingly poor fitness in the volunteers with type 2 diabetes. This suggests that early heart disease is already present in this population, despite the absence of clinical indicators, such as angina and shortness of breath."

Professor Gerry McCann, Professor of Cardiac Imaging at the University of Leicester and co-lead for the study, said: "If we can target these subtle heart impairments with treatments to increase blood supply to the heart, we may help to improve [fitness levels](#) and reduce the risk of [heart failure](#) in people with type 2 diabetes.

"We're now keen to explore such different treatment options to see which, if any, provide the best health outcomes for patients."

While a close association has been found between changes in the heart's blood supply and filling ability with exercise capacity, more research is needed to understand whether one causes the other.

More information: 'Cardiovascular determinants of aerobic exercise capacity in adults with type 2 diabetes', *Diabetes Care* (2020). [DOI: 10.2337/dc20-0706](#)

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