

Study identifies exercise as key to halting progress from diabetes to heart disease

September 30 2020, by Mark Hathaway



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An international study led by the University of Otago has revealed how exercise can reduce the chance of diabetes leading on to heart disease.

The research has identified that [exercise](#) triggers the release of small sequences of genetic code in the [heart](#) called microRNA, which increase protein production to improve heart structure and function.

The study, "Exercise regulates microRNAs to preserve coronary and cardiac function in the diabetic heart," has recently been published in the journal *Circulation Research*.

Associate Professors Daryl Schwenke and Rajesh Katare, of Otago's Department of Physiology, found that specific microRNA are adversely altered in the early stages of diabetes. These altered microRNA can reliably predict the inevitable onset of heart disease. Associate Professor Katare believes this is a pivotal new development as microRNA can serve as a reliable early biomarker for heart disease in diabetes.

"We've proven that by using exercise as a treatment, we can increase good microRNA, and reduce bad microRNA from causing damage. Exercise effectively improves regulation of microRNA to prevent the onset and progression of heart disease," Associate Professor Schwenke says.

Along with highlighting the role of exercise in regulating microRNA, the study also shows that microRNA are a potential novel target for the therapeutic treatment of heart disease in people with chronic diabetes.

"By increasing the good microRNA using pharmacological drugs it is possible to effectively reduce heart disease in diabetic subjects. This approach is not solely reliant on exercise," Associate Professor Schwenke says.

Over 250,000 thousand New Zealanders have diabetes according to the Ministry of Health, which defines diabetes as a serious health challenge to our country.

Associate Professor Schwenke believes this research has clear long-term benefits on both the quality of life for [diabetic patients](#) with heart disease, as well as alleviating the [economic burden](#) associated with current treatment of diabetes.

"By understanding the physiological role of microRNA we can see without doubt the positive role of exercise in preventing diabetic [heart disease](#)," he adds.

More information: Living Well with Diabetes: 2015-2020.
www.health.govt.nz/our-work/diabetes-2015-2020

Jason Kar-Sheng Lew et al. Exercise Regulates microRNAs to Preserve Coronary and Cardiac Function in the Diabetic Heart, *Circulation Research* (2020). [DOI: 10.1161/CIRCRESAHA.120.317604](https://doi.org/10.1161/CIRCRESAHA.120.317604)

Provided by University of Otago

Citation: Study identifies exercise as key to halting progress from diabetes to heart disease (2020, September 30) retrieved 20 March 2024 from <https://medicalxpress.com/news/2020-09-key-halting-diabetes-heart-disease.html>

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