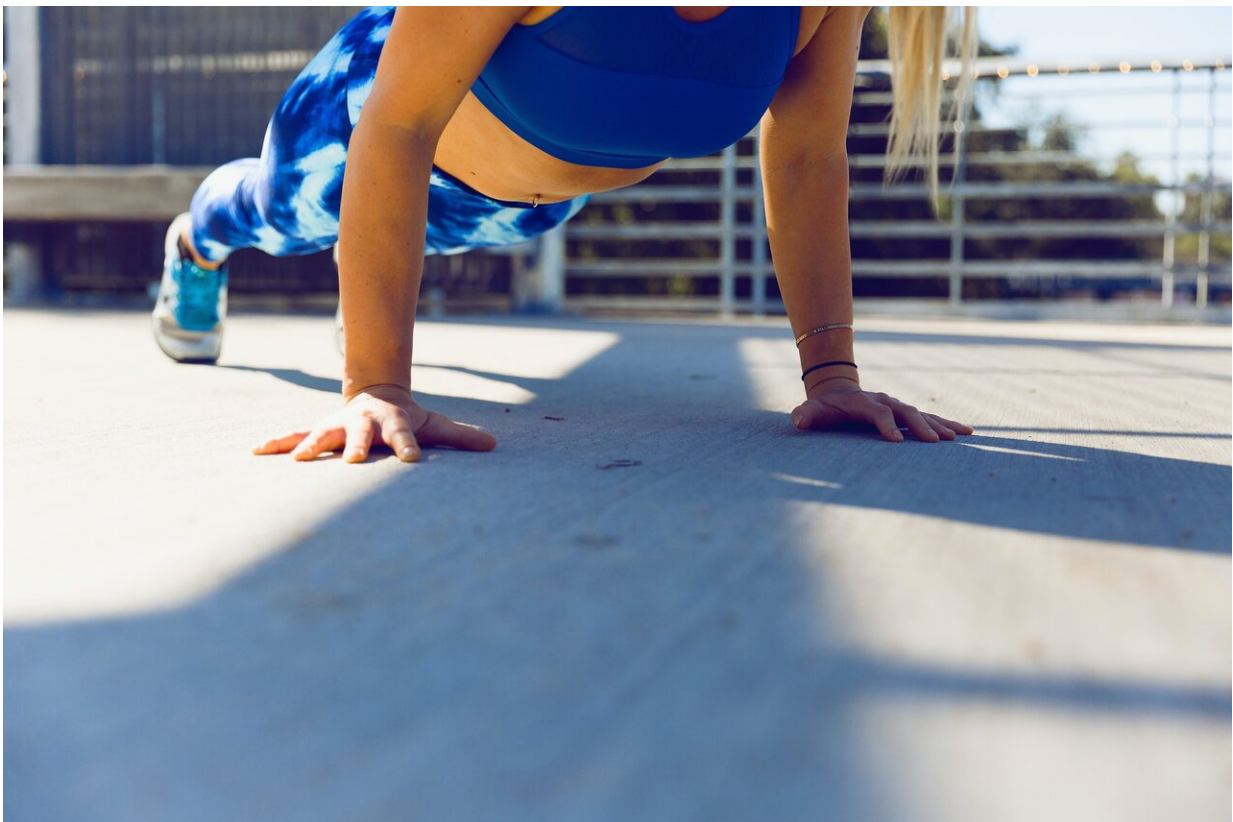


# An hour of daily exercise could help Arctic Inuit people with faulty gene to control their high blood sugar

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New research published in *Diabetologia* (the journal of the European Association for the Study of Diabetes [EASD]) suggests an hour of

hiking with hunting gear may be enough to help control blood glucose levels in Arctic Inuit with a faulty copy of the TBC1D4 gene, which increases their risk of type 2 diabetes. The findings, made by scientists in Denmark and Greenland, open the door to lifestyle precision medicine for the population, with the potential to help thousands across the Arctic region.

Around four percent of the Greenlandic Inuit [population](#) carry two copies of this genetic variant. Now, the researchers have discovered that a simple exercise intervention seems to stave off the [negative health effects](#).

"We are very excited by the findings, which could improve the lives of many people living with type 2 diabetes in the Arctic region," says Professor Torben Hansen from the Novo Nordisk Foundation Center for Basic Metabolic Research (CBMR) at the University of Copenhagen. The study involved a close collaboration between the Hansen Group and the University of Greenland, the National Institute of Public Health at the University of Southern Denmark, and Steno Diabetes Center Copenhagen.

## **An hour of hunting with hunting gear does the trick**

Greenland, with a small population of just 57,000, has experienced a dramatic rise in rates of type 2 diabetes over the past 25 years. Reporting in *Nature* in 2014, researchers from the same collaboration identified the faulty variant of the TBC1D4 gene in the Greenlandic Inuit population, which makes carriers less able to control their blood glucose levels, resulting in type 2 diabetes. Left untreated, the carriers of the gene mutation might be at increased risk of nerve damage, blindness and [heart disease](#).

The latest study examined whether physical activity can help carriers

with the faulty gene to control their blood glucose levels. They drew on data from a population cohort of 2,655 Greenlandic Inuit, which was collected as a general health survey of the Greenland population. The data included information on their variant of the TBC1D4 gene, physical activity collected by a questionnaire and a wearable device and [blood glucose levels](#) that were measured two hours after consuming a sugary drink.

They discovered that carriers with two copies of the gene merely needed to carry out moderate daily physical activity to reduce glucose levels to only slightly elevated levels. In a real-life setting, this equates to an hour of hiking with hunting gear.

"Our finding opens the door to lifestyle precision medicine, in the form of physical activity, that might benefit the 1 in 25 of the Arctic Inuit population who carry two copies of the faulty TBC1D4 gene," says Postdoc Theresia Schnurr from CBMR.

## **A positive outlook for thousands of Arctic Inuit**

The main limitation of the study is that it was limited to the analysis of the general health survey data. The scientists propose an exercise-intervention trial of Greenlanders to quantify the clinical impact of [physical activity](#) in carriers of the faulty gene, with which to recommend personalised treatment.

However, given the initial findings and the prevalence of the faulty TBC1D4 gene in the Inuit Arctic population, the findings present a [positive outlook](#) for thousands among this population with type 2 [diabetes](#) across the Arctic region.

**More information:** Theresia M. Schnurr et al. Physical activity attenuates postprandial hyperglycaemia in homozygous TBC1D4 loss-of-

function mutation carriers, *Diabetologia* (2021). DOI: [10.1007/s00125-021-05461-z](https://doi.org/10.1007/s00125-021-05461-z)

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