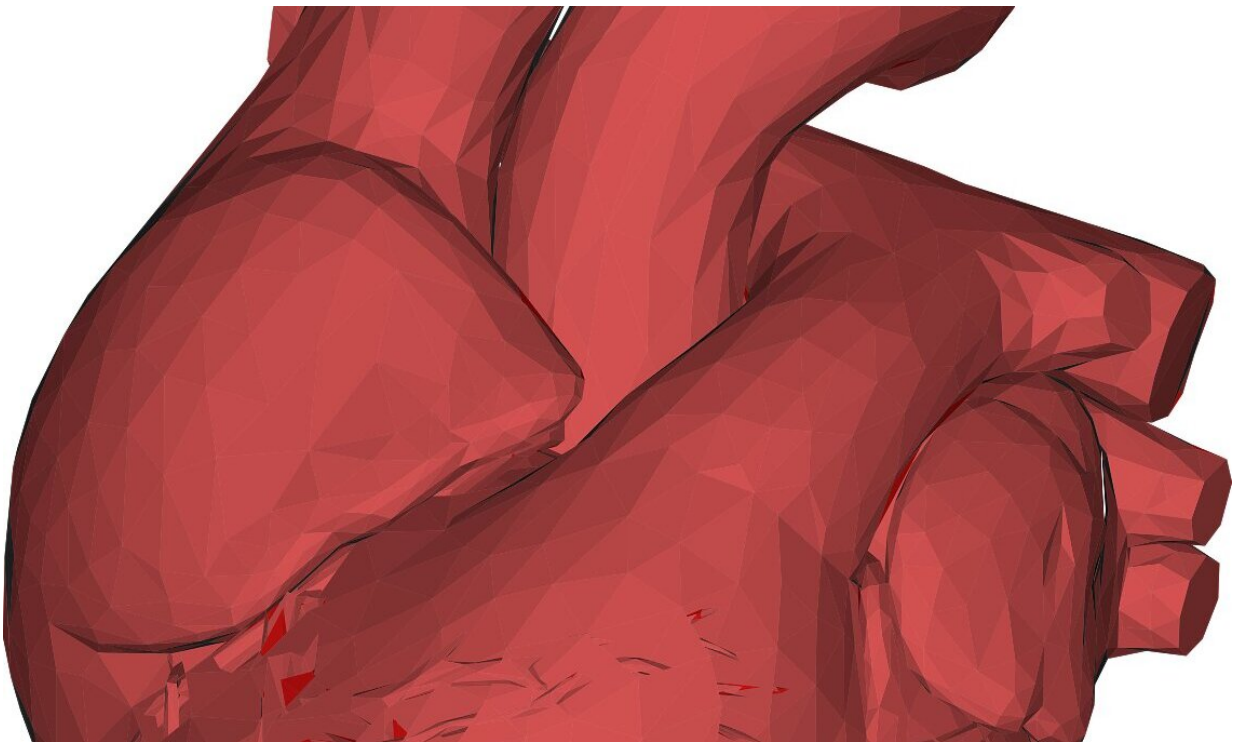


Boosting duration, intensity and frequency of physical activity may lower heart failure risk

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A six-year analysis of more than 94,000 adults in the U.K. Biobank with no history of heart failure at enrollment has found that engaging in moderate or vigorous physical activity may lower the risk of developing heart failure, according to new research published today in the American Heart Association's journal *Circulation*.

The study is one of the first to use objectively measured [activity levels](#) to estimate [heart](#) failure risk. The results are consistent with previous studies finding that performing 150-300 minutes of moderate exercise or 75-150 minutes of vigorous exercise each week may reduce the incidence of heart attack and stroke.

Heart failure is a chronic, progressive condition that develops when the heart is not capable of pumping sufficient blood to keep up with the body's needs for blood and oxygen, and it can result in fatigue and difficulty breathing. Heart failure affects more than 6 million adults in the United States, according to the [American Heart Association](#), and more than 86,000 Americans died of heart failure in 2019. The [Association](#) recommends adults should engage in at least 150 minutes per week of moderate-intensity or 75 minutes per week of vigorous-intensity [aerobic physical activity](#).

"There are many potential ways that [regular physical activity](#) may reduce the risk of developing heart failure," said Frederick K. Ho, Ph.D., co-lead author of the study and a lecturer in [public health](#) at the University of Glasgow in Glasgow, Scotland. "For example, physical activity helps prevent weight gain and related cardiometabolic conditions, such as [high blood pressure](#) and Type 2 diabetes, all of which are [risk factors](#) for heart failure. Regular physical exercise may also strengthen the heart muscle, which, in turn, may prevent heart failure from developing."

The investigators analyzed the health records of 94,739 adults aged 37-73 in the U.K. Biobank—a large research database in the United Kingdom that enrolled and collected health information on 500,000 adults who received care through the National Health Service. The participants in the U.K. Biobank were enrolled in the database between 2006 and 2010 across Scotland, England and Wales.

Data for this study was gathered between 2013-2015. During that time

period, the subset of 94,739 participants were randomly invited to enroll in the study via the email address they had provided to the U.K. Biobank. Participants were an average age of 56 years at enrollment; 57% were female, and 96.6% were white adults. At the time each participant was invited, enrolled and analyzed, they had not been diagnosed with heart failure or had a heart attack. Each participant wore a wrist accelerometer for seven consecutive days, 24 hours per day, to measure the intensity and duration of physical activity. After enrollment, data was collected through linked hospital and death records.

During a median follow-up of 6.1 years after the physical activity measurement was conducted, the analysis found:

- The adults who logged 150-300 minutes of moderate physical activity in one week had a 63% lower risk of heart failure; and
- those who performed 75-150 minutes of vigorous physical activity in one week were estimated to have a 66% lower risk of heart failure compared to participants who engaged in minimal to no moderate or [vigorous physical activity](#).

The estimated risk reductions were adjusted for age, sex, ethnicity, education, socioeconomic conditions, smoking, alcohol intake and dietary factors.

"These findings indicate that every physical movement counts. A leisurely, 10-minute walk is better than sitting and no physical activity. And, if possible, try to walk a little faster, which increases the intensity and potential benefits of exercise," Ho said.

According to Ho, the study results suggest that going above and beyond the current AHA recommendations for moderate activity may provide greater protection against heart failure. "We found that moderate physical activity has the potential increased cardiovascular risk benefits

up until 500 minutes/week, as appropriate for each individual," he said.

People whose risk factors for heart failure include having a BMI that meets the criteria for overweight or obese, high blood pressure and elevated glucose or cholesterol, may be particularly likely to benefit from increasing their physical activity, according to Ho and colleagues.

"Health care professionals may suggest more physical activity based on a patient's current lifestyle and health status," Ho said. "Generally, moderate physical activity is easier to incorporate into daily routines, and it's generally safer. Vigorous physical activity is sometimes the most time-efficient and may be more suitable for busy people. However, caution is advised for all when beginning a new physical activity regimen to prevent injuries or acute adverse events (such as a heart attack in a formerly sedentary person initiating a vigorous exercise program)."

This observational study cannot prove a cause-and-effect link between the amount and intensity of physical activity and the risk of developing heart failure. Because participants in the U.K. Biobank are overwhelmingly white, further studies would be needed to confirm that these results apply to people from diverse backgrounds who may experience negative social determinants of health.

"Our findings add to the overwhelming body of other evidence, suggesting that maintaining even a modest amount of regular [physical activity](#) can help prevent a range of chronic conditions from developing, including [heart failure](#)," said Naveed Sattar, the senior author of the study. Sattar is a professor of metabolic medicine at the Institute of Cardiovascular & Medical Sciences at the University of Glasgow.

Co-authors are joint lead author Ziyi Zhou, M.P.H.; Fanny Petermann-Rocha, Ph.D.; Solange Para-Soto, M.Sc.; Jirapitcha Boonpor, M.Sc.; Paul Welsh, Ph.D.; Jason M.R. Gill, Ph.D.; Stuart R. Gray, Ph.D.;

Naveed Sattar, M.D.; Jill P. Pell, M.D.; and Carlos Celis-Morales, Ph.D.

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