

Stop the clocks: Brisk walking may slow biological aging process

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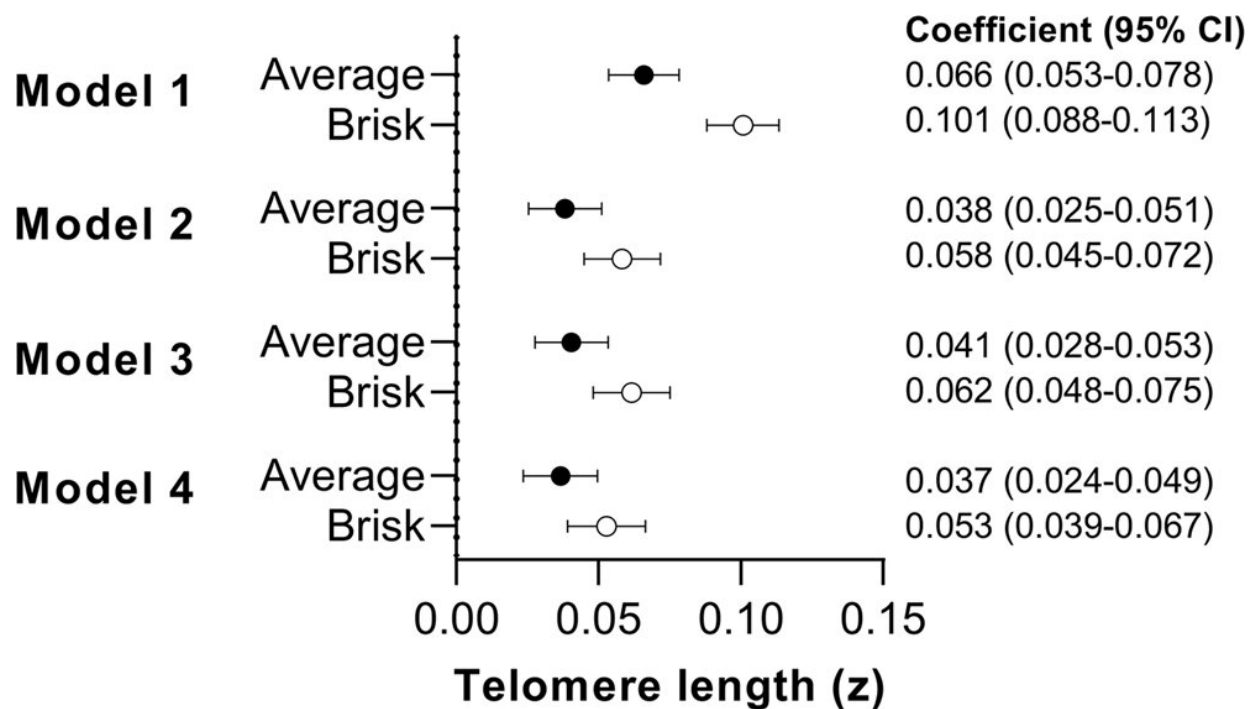


Fig. 1: Associations between self-reported walking pace and LTL. Data presented as β -coefficient (95% CI) for “average” (n = 212,032) and “brisk” (n = 166,641) walking pace relative to “slow” (26,804) walking pace (reference). Model 1: adjusted for age, sex, ethnicity, white blood cell count. Model 2: model 1 additionally adjusted for education level, employment status, Townsend index of deprivation, fruit and vegetable intake, processed and red meat intake, oily fish intake, regularity of adding salt to food, alcohol intake, smoking status, average sleep duration, blood pressure or cholesterol medication use, diabetes diagnosis or insulin prescription, mobility limitation, and prevalent cardiovascular disease and prevalent cancer. Model 3: model 2 additionally adjusted for total physical activity volume (MET-min/week). Model 4: model 3

additionally adjusted for body mass index. Credit: *Communications Biology* (2022). DOI: 10.1038/s42003-022-03323-x

A new study of genetic data published Wednesday April 20 of more than 400,000 UK adults has revealed a clear link between walking pace and a genetic marker of biological age.

Confirming a causal link between walking pace and leucocyte telomere length (LTL)—an indicator of biological age—the Leicester-based team of researchers estimate that a lifetime of brisk walking could lead to the equivalent of 16 years younger biological age by midlife.

Researchers from the University of Leicester at the National Institute for Health Research (NIHR) Leicester Biomedical Research Center studied genetic data from 405,981 middle-aged UK Biobank participants and found that a faster walking pace, independent of the amount of physical activity, was associated with longer telomeres.

Telomeres are the "caps" at the end of each chromosome, and they hold repetitive sequences of non-coding DNA that protect the chromosome from damage, similar to the way the cap at the end of a shoelace stops it from unraveling.

Each time a cell divides, these telomeres become shorter—until a point where they become so short that the cell can no longer divide, known as "replicative senescence." Therefore, scientists consider LTL a strong marker for "biological age," independent from when an individual was born.

Although the relationship between telomere length and disease is not fully understood, the build-up of these senescent cells is believed to

contribute to a range of symptoms we associate with aging, such as frailty and age-related diseases.

While the physical, mental, social and health benefits of walking are well-documented, this study is one of the first of its kind to compare genetic data with both self-reported walking speeds, as well as actual measurements of movement intensity from wearable activity tracking devices worn by participants.

Dr. Paddy Dempsey is a Lecturer and Research Fellow at the University of Leicester and within the NIHR Leicester Biomedical Research Center, part of the University Hospitals of Leicester (UHL) NHS Trust, and lead author on the study published in *Communications Biology*. He said: "Previous research on associations between walking pace, physical activity and telomere length has been limited by inconsistent findings and a lack of high-quality data.

"This research uses [genetic data](#) to provide stronger evidence for a causal link between faster walking pace and longer telomere length. Data from wrist-worn wearable activity tracking devices used to measure habitual physical activity also supported a stronger role of habitual activity intensity (e.g. faster walking) in relation to telomere length.

"This suggests measures such as a habitually slower walking speed are a simple way of identifying people at greater risk of chronic disease or unhealthy aging, and that activity intensity may play an important role in optimizing interventions. For example, in addition to increasing overall walking, those who are able could aim to increase the number of steps completed in a given time (e.g., by walking faster to the bus stop). However, this requires further investigation."

Researchers from the University of Leicester have previously shown using UK Biobank that as little as 10 minutes of brisk walking a day is

associated with longer life expectancy, and that brisk walkers have up to 20 years' greater life expectancy compared to slow walkers.

This new study demonstrates a causal link between brisk walking and [telomere](#) length and, significantly, not the other way around.

Tom Yates, senior author and Professor of Physical Activity, Sedentary Behavior and Health at the University of Leicester and NIHR Leicester Biomedical Research Center, added: "Whilst we have previously shown that walking pace is a very strong predictor of health status, we have not been able to confirm that adopting a brisk walking pace actually causes better health. In this study we used information contained in people's genetic profile to show that a faster walking pace is indeed likely to lead to a younger biological age as measured by telomeres."

"Investigation of a UK Biobank cohort reveals Causal Associations of Self-Reported Walking Pace with Telomere Length" is published in *Communications Biology*.

More information: Paddy C. Dempsey et al, Investigation of a UK biobank cohort reveals causal associations of self-reported walking pace with telomere length, *Communications Biology* (2022). [DOI: 10.1038/s42003-022-03323-x](https://doi.org/10.1038/s42003-022-03323-x)

Provided by University of Leicester

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