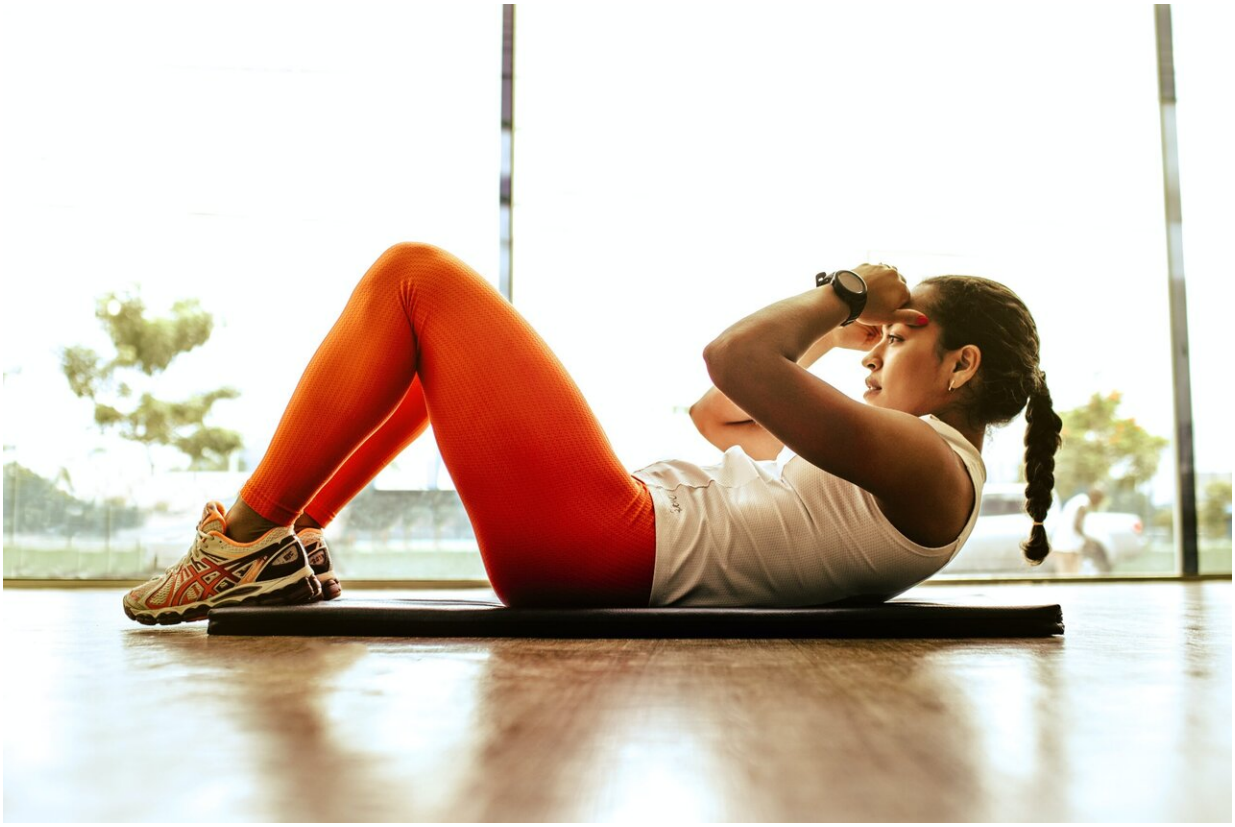
Regular exercise prevents DNA damage with aging

April 8 2024, by Mario Boone



Credit: Unsplash/CC0 Public Domain

Regular aerobic exercise later in life prevents genomic instability characterized by DNA damage and telomere dysfunction, according to a study from the Department of Internal Medicine at the University of Utah. Researchers will present their work this week at the American Physiology Summit, the flagship annual meeting of the American Physiological Society (APS), in Long Beach, California.

"These new findings will greatly impact our understanding of the mechanisms of how aerobic exercise improves vascular health at the level of genomic stability," says Jisok Lim, Ph.D.

Late-life exercise used to be thought of as ineffective. However, existing studies indicate aerobic exercise later in life lowers the risk of cardiovascular disease-related mortality. Yet, the specific factors contributing to this effect have not been completely understood.

Researchers examined whether regular exercise with aging may prevent DNA damage and telomere dysfunction. Telomeres are protective caps at the end of chromosomes. In this study, exercise was shown to be especially helpful in cells that come in direct contact with blood flow (endothelial cells). The benefits of aerobic exercise are particularly noticeable in the aortic regions less prone to atherosclerosis due to favorable blood flow patterns.

During the four-month study, 15 male mice were given access to a voluntary running wheel. The mice were assigned to high-, moderate- and low-running groups based on their consistent running distances. Aortic tissues exposed to different blood flow patterns were collected to evaluate DNA damage and telomere function. The findings suggest the increased level of exercise later in life has a beneficial impact on DNA damage and telomere dysfunction.

There are many contributing factors to arterial aging. The driving factor among them is DNA damage. While more study in this area is needed, physiologists hope these findings lay the groundwork for improving human health in the future.

"By revealing the varied responses of aortic regions experiencing different blood flow patterns and cell types to aerobic exercise, this research will provide a firm ground on a detailed and customized approach to interventions for cardiovascular health," said Jisok Lim, Ph.D., a postdoctoral fellow at the University of Utah and lead author of the study.

Provided by American Physiological Society

Citation: Regular exercise prevents DNA damage with aging (2024, April 8) retrieved 21 May 2024 from https://medicalxpress.com/news/2024-04-regular-dna-aging.html