

Toe-tapping to better health: Fidgeting helps prevent arterial dysfunction from sitting

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Jaume Padilla, Ph.D., an assistant professor of nutrition and exercise physiology at the University of Missouri, led a study that found fidgeting while sitting can help prevent arterial disease. Credit: Justin Kelley/MU Health

Previous research has shown that sitting for an extended period of time at a computer or during a long airline flight reduces blood flow to the

legs, which may contribute to the development of cardiovascular disease. Now, researchers from the University of Missouri have found that fidgeting while sitting can protect the arteries in legs and potentially help prevent arterial disease.

"Many of us sit for hours at a time, whether it's binge watching our favorite TV show or working at a computer," said Jaume Padilla, Ph.D., an assistant professor of nutrition and [exercise physiology](#) at MU and lead author of the study. "We wanted to know whether a small amount of leg fidgeting could prevent a decline in leg vascular function caused by prolonged sitting. While we expected fidgeting to increase [blood flow](#) to the lower limbs, we were quite surprised to find this would be sufficient to prevent a decline in arterial function."

During the study, the researchers compared the leg vascular function of 11 healthy young men and women before and after three hours of sitting. While sitting, the participants were asked to fidget one leg intermittently, tapping one foot for one minute and then resting it for four minutes, while the other leg remained still throughout. On average, the participants moved their feet 250 times per minute. The researchers then measured the blood flow of the popliteal—an artery in the lower leg—and found that the fidgeting leg had a significant increase in blood flow, as expected, while the stationary leg experienced a reduction in blood flow.

Research has shown that increased blood flow and its associated shear stress—the friction of the flowing blood on the artery wall—is an important stimulus for vascular health. However, fidgeting's protective role had not been established.

While only one leg was exposed to fidgeting during the experiment, in a real-world scenario the researchers recommend tapping both legs to maximize the beneficial effects. However, the researchers caution that

fidgiting is not a substitute for walking and exercise, which produce more overall cardiovascular benefits.

"You should attempt to break up sitting time as much as possible by standing or walking," Padilla said. "But if you're stuck in a situation in which walking just isn't an option, fidgiting can be a good alternative. Any movement is better than no movement."

The study, "Prolonged Sitting-induced Leg Endothelial Dysfunction is Prevented by Fidgiting," recently was published by the *American Journal of Physiology Heart and Circulatory Physiology*. Research reported in this publication was supported by the National Institutes of Health (K01 HL-297 125503 and R21 DK-105368) and the Japan Society for the Promotion of Science (14J09537). The researchers have no conflicts of interest to declare related to this study.

In addition to Padilla, the research team included Jill Kanaley, Ph.D., professor and associate chair of the MU Department of Nutrition and Exercise Physiology; Lauren Walsh, graduate student in the MU Department of Nutrition and Exercise Physiology; Robert Restaino, graduate student in the MU Department of Medical Pharmacology and Physiology; Takuma Morishima, Ph.D., postdoctoral fellow in the MU Department of Nutrition and Exercise Physiology; and Paul Fadel, Ph.D., professor of kinesiology and director of clinical translational science at the University of Texas at Arlington College of Nursing and Health Innovation.

The MU Department of Nutrition and Exercise Physiology is jointly administered by the School of Medicine, the College of Agriculture, Food and Natural Resources, and the College of Human Environmental Sciences.

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