

Large amounts of sedentary time linked with higher risk of dementia in older adults, study shows

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Adults aged 60 and older who spend more time engaging in sedentary

behaviors like sitting while watching TV or driving may be at increased risk of developing dementia, according to a new study by USC and University of Arizona researchers.

Their study showed the risk of [dementia](#) significantly increases among adults who spend over 10 hours a day engaging in sedentary behaviors like sitting—a notable finding considering the average American is sedentary for about 9.5 hours each day.

The study, published in [JAMA](#), also revealed the way [sedentary behavior](#) is accumulated over the course of the day didn't matter as much as the total time spent sedentary each day. Whether spent in extended periods spanning several hours or spread out intermittently throughout the day, total sedentary behavior had a similar association with dementia according to study author David Raichlen.

"Many of us are familiar with the common advice to break up long periods of sitting by getting up every 30 minutes or so to stand or walk around. We wanted to see if those types of patterns are associated with dementia risk. We found that once you take into account the total time spent sedentary, the length of individual sedentary periods didn't really matter," said Raichlen, professor of biological sciences and anthropology at the USC Dornsife College of Letters, Arts and Sciences.

Researchers used data from the U.K. Biobank, a large-scale biomedical database of participants across the United Kingdom, to investigate possible links between sedentary behavior and dementia risk.

As part of a U.K. Biobank sub-study, over 100,000 adults agreed to wear accelerometers, wrist-worn devices for measuring movement, for 24 hours per day for one week. The researchers focused on a sample of approximately 50,000 adults from this sub-study over the age of 60 who did not have a diagnosis of dementia at the start of the study.

The researchers then applied a [machine-learning algorithm](#) to analyze the large dataset of accelerometer readings and classify behaviors based on different intensities of physical activity. The algorithm was able to discern between different types of activity such as sedentary behavior versus sleeping. The accelerometer data, combined with advanced computing techniques, provided researchers with an objective measure of the time spent engaging in different types of sedentary behaviors.

After an average of six years of follow-up, the researchers used inpatient hospital records and death registry data to determine dementia diagnosis. They found 414 cases positive for dementia.

Then, the team adjusted their [statistical analysis](#) for certain demographics (e.g., age, sex, education level, race/ethnicity, [chronic conditions](#), genetics) and lifestyle characteristics (physical activity, diet, smoking and [alcohol use](#), self-reported [mental health](#)) that could affect brain health.

Total time spent sedentary each day drives dementia risk

While high amounts of sedentary behavior were linked with increased risk of dementia, the researchers found that there were certain amounts of sedentary behavior that were not associated with dementia.

"We were surprised to find that the risk of dementia begins to rapidly increase after 10 hours spent sedentary each day, regardless of how the sedentary time was accumulated," said study author Gene Alexander, professor of psychology and psychiatry at the Evelyn F. McKnight Brain Institute at the University of Arizona and Arizona Alzheimer's Disease Research Center.

"This suggests that it is the total time spent sedentary that drove the relationship between sedentary behavior and dementia risk, but importantly lower levels of sedentary behavior, up to around 10 hours, were not associated with increased risk."

"This should provide some reassurance to those of us with office jobs that involve prolonged periods of sitting, as long we limit our total daily time spent sedentary," said Raichlen.

The study builds on their [previous research](#), which used self-reported health data to investigate how certain types of sedentary behavior, like sitting and watching TV, affect dementia risk more than others.

"Our latest study is part of our larger effort to understand how sedentary behavior affects brain health from multiple perspectives. In this case, wearable accelerometers provide an objective view of how much time people dedicate to sedentary behavior that complements our past analyses," said Raichlen.

More research is needed to establish causality and whether physical activity can mitigate the risk of developing dementia, the authors said.

More information: Raichlen et al, Sedentary Behavior and Incident Dementia Among Older Adults, *JAMA* (2023). [DOI: 10.1001/jama.2023.15231](https://doi.org/10.1001/jama.2023.15231)

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