

Study links prolonged sedentary time to distractibility in adults with obesity, overweight

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Kinesiology and community health professor Dominika Pindus and her colleagues found that adults with obesity or overweight who spent more time in prolonged sedentary bouts were more easily distracted. Credit: L. Brian Stauffer

Scientists used accelerometers to track daily activity levels for a week in 89 adults with obesity or overweight and, in a series of tests, measured their ability to multitask and maintain their attention despite distractions. The study revealed that individuals who spent more sedentary time in bouts lasting 20 minutes or more were less able to overcome distractions.

Reported in the *International Journal of Obesity*, the research adds to the evidence linking sedentary behaviors and cognition, said University of Illinois Urbana-Champaign kinesiology and community health professor Dominika Pindus, who led the work on the paper.

"Several studies have examined the relationship between different types of sedentary behaviors such as TV viewing and cognitive functions in

children and adults," Pindus said. "The relationships they observed varied with the type of sedentary behavior. These studies primarily measured sedentary behaviors during [leisure time](#)."

The research found that regularly sitting for extended periods is linked to increased mortality and cardiovascular disease, Pindus said. People who do not engage in at least 60 minutes per day of moderate-to-[vigorous physical activity](#) and sit for eight hours or more have an increased health risk. Other studies suggest that bouts of prolonged sitting lasting 20 minutes or more negatively affect levels of blood sugar after a meal.

"Few studies, however, have examined the relationship between prolonged sedentary time and cognitive functions," Pindus said. To address this gap in research, she and her colleagues focused on the associations between objectively measured, prolonged sedentary time and cognition in adults 25-45 years old with obesity or overweight.

"We know from previous research that people with obesity or overweight don't do as well on certain types of cognitive tasks," Pindus said. "These tasks engage [executive functions](#)—cognitive functions that are important for reasoning and staying focused on a goal."

Some studies have found that long-term physical activity interventions in preadolescent children or older adults can improve those functions.

"But we don't have much data on how prolonged sedentary time is linked to executive functions in working-age people with obesity or overweight," she said. "If we can show how sedentary time and physical activity in [everyday life](#) relate to executive functions in those individuals, we may be able to design more targeted lifestyle interventions to

improve cognition in this population."

The researchers collected baseline information for all participants, tested their cognitive ability and calculated each person's body mass index and percent body fat. Participants wore accelerometers on their waists during waking hours for seven days. They also completed cognitive tasks and measures of brain function in a laboratory setting.

"We used EEG recordings to measure electrical potentials that are generated in the brain while participants engaged in tasks that challenged them to focus, ignore distractions and flexibly switch attention between tasks," Pindus said. A controller connected to a computer allowed participants to respond to problems while the speed and accuracy of their responses was recorded.

A statistical analysis of participants' sedentariness in relation to their speed and accuracy on a [task](#) that measures distractibility found a relationship between the two, Pindus said.

"Our key finding was that people who spent more time in prolonged sedentary bouts were more easily distracted," she said.

More research is needed to determine how the structure of a person's [sedentary time](#) influences cognition, Pindus said.

"If you make sure to break up your sitting [time](#) with brief bouts of physical activity, could that reduce how distracted you will be?" she said. "And if it does, what is driving this effect? This is something we want to explore."

More information: Dominika M. Pindus et al, The relationships between prolonged sedentary time, physical activity, cognitive control, and P3 in adults with overweight and obesity, *International Journal of Obesity* (2021). [DOI: 10.1038/s41366-020-00734-w](#)

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