

# Study links more time spent sitting to higher risk of death

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A new study from American Cancer Society researchers finds it's not just how much physical activity you get, but how much time you spend sitting that can affect your risk of death. Researchers say time spent sitting was independently associated with total mortality, regardless of physical activity level. They conclude that public health messages should promote both being physically active and reducing time spent sitting. The study appears early online in the *American Journal of Epidemiology*.

Increasing obesity levels in the United States are widely predicted to have major public health consequences. A growing epidemic of overweight and obesity has been attributed in part to reduced overall [physical activity](#). And while several studies support a link between sitting time and obesity, [type 2 diabetes](#), cardiovascular disease risk factors (11, 16, 17), and unhealthy dietary patterns in children and adults (18-20), very few studies have examined time spent sitting in relation to total mortality (21-23). Thus, public health guidelines focus largely on increasing physical activity with little or no reference to reducing time spent sitting.

To explore the association between sitting time and mortality, researchers led by Alpa Patel, Ph.D. analyzed survey responses from 123,216 individuals (53,440 men and 69,776 women) who had no history of cancer, [heart attack](#), stroke, or [emphysema](#)/other [lung disease](#) enrolled in the American Cancer Society's [Cancer Prevention II](#) study in 1992. They examined the amount of time spent sitting and physical activity in relation to mortality between 1993 and 2006. They found that

more leisure time spent sitting was associated with higher risk of mortality, particularly in women. Women who reported more than six hours per day of sitting were 37 percent more likely to die during the time period studied than those who sat fewer than 3 hours a day. Men who sat more than 6 hours a day were 18 percent more likely to die than those who sat fewer than 3 hours per day. The association remained virtually unchanged after adjusting for physical activity level. Associations were stronger for cardiovascular disease mortality than for cancer mortality.

When combined with a lack of physical activity, the association was even stronger. Women and men who both sat more and were less physically were 94% and 48% more likely, respectively, to die compared with those who reported sitting the least and being most active.

"Several factors could explain the positive association between time spent sitting and higher all-cause death rates," said Dr. Patel. "Prolonged time spent sitting, independent of physical activity, has been shown to have important metabolic consequences, and may influence things like triglycerides, high density lipoprotein, cholesterol, fasting plasma glucose, resting blood pressure, and leptin, which are biomarkers of obesity and cardiovascular and other chronic diseases."

The authors conclude that "[public health](#) messages and guidelines should be refined to include reducing time spent sitting in addition to promoting physical activity. Because a sizeable fraction of the population spends much of their time sitting, it is beneficial to encourage sedentary individuals to stand up and walk around as well as to reach optimal levels of physical activity."

**More information:** "Leisure Time Spent Sitting in Relation to Total Mortality in a Prospective Cohort of US Adults." Alpa V. Patel, Leslie Bernstein, Anusila Deka, Heather Spencer Feigelson, Peter T. Campbell,

5 Susan M. Gapstur, Graham A. Colditz, and Michael J. Thun. Am J  
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