Taking 9,000 to 10,000 steps daily may counteract risk of death and cardiovascular disease in highly sedentary people

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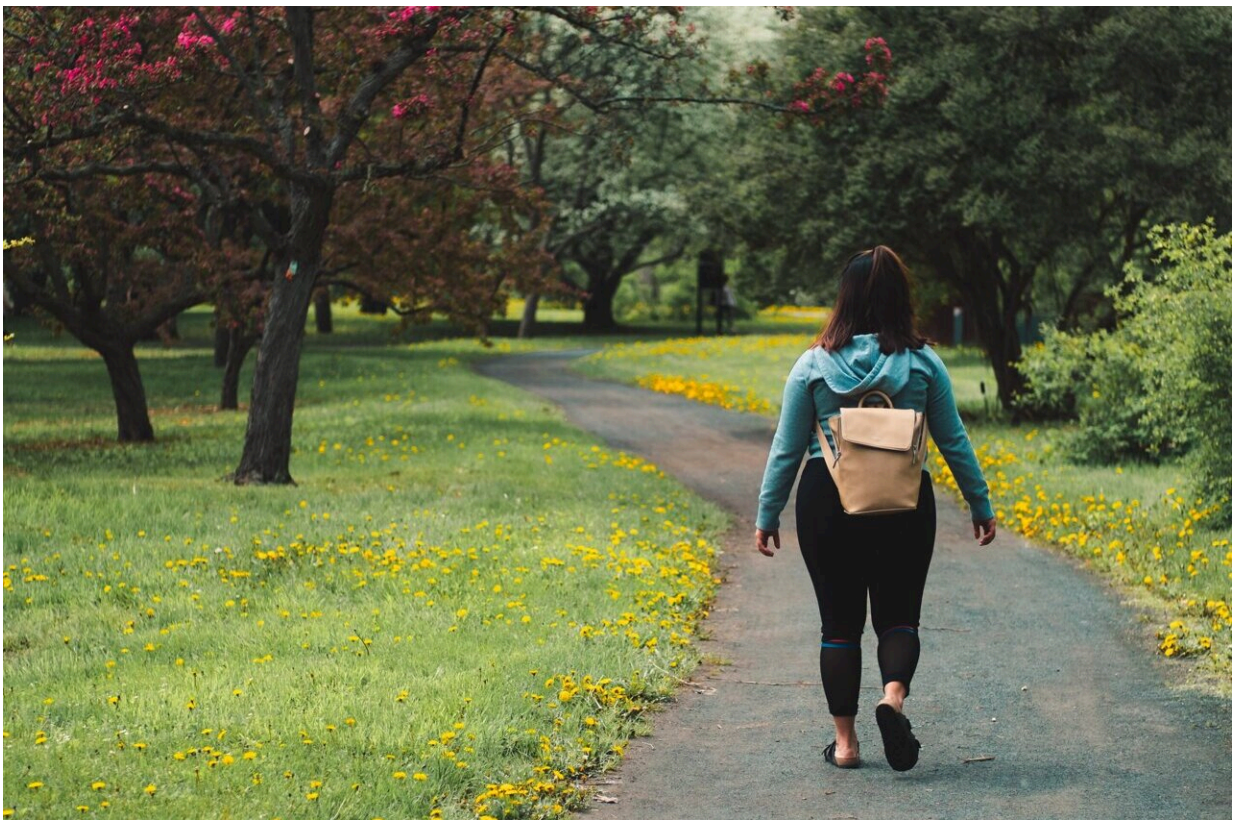

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Every additional step up to around 10,000 steps per day reduces the risk of death and cardiovascular disease (CVD), regardless of how much

remaining time is spent sedentary, reports a large population-based study published online in the *British Journal of Sports Medicine*.

Some previous studies have shown that greater daily step counts are associated with lower levels of death and CVD, while others have linked high levels of sedentary behavior with increased risks of CVD and death. However, none of these studies investigated whether high levels of physical activity may offset or lessen the higher risk of death and CVD associated with time spent sedentary.

To address this, the authors of this new study, led by the University of Sydney/Charles Perkins Center accessed data on 72,174 individuals (average age 61; 58% female) enrolled in the UK Biobank study—a major biomedical database—who had worn an accelerometer device on their wrist for seven days to measure their physical activity.

The accelerometer data were used to estimate daily step count and time spent sedentary, that is sitting or lying down while awake.

The median daily step count for participants was 6,222 steps/day, and 2,200 steps/day (the lowest 5% of daily steps among all participants) was taken as the reference point for assessing the impact on death and CVD events of increasing step count.

The median time spent sedentary was 10.6 hours/day, so study participants sedentary for 10.5 hours/day or more were considered to have high sedentary time while those who spent less than 10.5 hours/day sedentary had low sedentary time.

Over an average 6.9 years follow-up, 1,633 deaths and 6,190 CVD events occurred.

After taking into account other potentially influential factors, the authors

calculated that the optimal number of steps per day to counteract high sedentary time was between 9,000 to 10,000 steps/day, which lowered mortality risk by 39% and incident CVD risk by 21%.

In both cases, 50% of the benefit was achieved at between 4,000 and 4,500 steps/day.

This is an observational study so can't establish cause and effect. And although the large sample size and long follow-up allowed the risk of bias to be reduced, the authors acknowledge the possibility that other unmeasured factors may have affected their results. As steps and sedentary time were obtained in a single time point, this could also lead to bias, they add.

Nevertheless, they conclude, "Any amount of daily steps above the referent 2,200 steps/day was associated with lower mortality and incident CVD risk, for low and high sedentary time.

"Accruing between 9,000 and 10,000 steps/day optimally lowered the risk of mortality and incident CVD among highly sedentary participants. The minimal threshold associated with substantially lower mortality and CVD risk was between 4,000 and 4,500 steps/day."

They add, "Our prospective results provide relevant findings that can be used to augment public health messaging and inform the first generation of device-based physical activity and sedentary behavior guidelines, which will likely include specific recommendations on daily stepping."

More information: Do the associations of daily steps with mortality and incident cardiovascular disease differ by sedentary time levels? A device-based cohort study, *British Journal of Sports Medicine* (2024). DOI: 10.1136/bjsports-2023-107221

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