

Physical activity at any intensity linked to lower risk of early death

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A multi-national team of researchers, including authors from the National Institute for Health Research (NIHR) Leicester Biomedical Research Centre (BRC), have produced clear evidence that higher levels of physical activity—regardless of intensity—are associated with a lower risk of early death in middle aged and older people.

The findings, published in *The BMJ* today, also show that being sedentary, for example sitting, for 9.5 hours or more a day (excluding sleeping time) is associated with an increased risk of death.

The World Health Organisation guidelines recommend at least 150 minutes of moderate intensity or 75 minutes of vigorous physical activity each week for adults aged between 18 and 64 years. However, these are based mainly on self-reported activity, which is often imprecise. So exactly how much activity (and at what intensity) is needed to protect health remains unclear.

To explore this further, researchers led by Professor Ulf Ekelund at the Norwegian School of Sport Sciences in Oslo analysed [observational](#)

[studies](#) assessing physical activity and sedentary time with death ("all-cause mortality").

Studies included in the research used accelerometers (a wearable device that tracks the volume and intensity of activity during waking hours) to objectively measure daily activity levels.

Examples of light intensity activity include walking slowly or light tasks such as cooking or washing dishes. Moderate activity includes any activities that make you breath harder, such as brisk walking.

Data from eight high quality studies, including one funded by the NIHR Collaboration for Leadership in Applied Health Research and Care (CLAHRC) East Midlands, involved 36,383 adults aged at least 40 years (average age 62) were used in the analysis. Activity levels were categorised into quarters, from least to most active, and participants were tracked for an average of 5.8 years.

During follow-up, 2,149 (5.9 per cent) participants died. After adjusting for potentially influential factors, the researchers found that any level of physical activity, regardless of intensity, was associated with a substantially lower risk of death.

Deaths fell steeply as total volume of physical activity increased up to a plateau of about 300 minutes (5 hours) per day of light-intensity physical activity or about 24 minutes per day moderate intensity physical activity. At these levels the risk of death was halved compared to those engaging in little or no physical activity.

Professor Tom Yates, a professor of physical activity, sedentary behaviour and health at the University of Leicester and a co-author of the study, said: "These results are fantastic. It has previously been widely assumed that more is better in terms of physical activity for health. However, this study suggests health may be optimised with just 24

minutes per day of brisk walking or other forms of moderate-intensity physical activity.

"Another important finding was that spending 9.5 hours or more each day sedentary—which essentially means sitting was associated with a statistically significant increased risk of death, with each hour more above this threshold increasing the risk of death further. This highlights the importance of avoiding spending most of the day sitting, as well as undertaking purposeful physical activity."

The researchers point to some limitations. For example, all studies were conducted in the US and western Europe, and included adults who were at least 40 years old, so findings may not apply to other populations or to younger people.

Nevertheless, they say the large sample size and device based measures of sedentary time and physical activity provide more precise results than previous studies.

Dr. Charlotte Edwardson, an associate professor in physical activity, sedentary behaviour and health at the University of Leicester and a co-author of the study, said: "These findings really reinforce the saying 'Doing something is better than doing nothing'. They show that physical activity of ANY intensity lowers the risk of [death](#), so if you're someone who doesn't achieve the recommended levels of moderate intensity physical activity, then doing more light activity, for example, pottering around more at work or at home and just generally being on your feet more, will still be beneficial.

"Also, a large risk reduction was seen between the least and the second least active group suggesting that incorporating some time doing physical activity, light or moderate intensity, in daily life is associated with a big health benefit. For example, the difference between the least and second least active groups was about 60 mins of light activity and 5 mins of moderate activity.

"Our results provide important data for informing public health recommendations, and suggest that the public health message might simply be "sit less, move more and more often"."

In a linked editorial in *The BMJ*, independent researchers acknowledged the importance of the findings, concluding that, "developing ways to limit sedentary time and increase activity at any level could considerably improve health and reduce mortality."

The paper, 'Dose-response associations between accelerometry measured [physical activity](#) and [sedentary time](#) and all-cause mortality: systematic review and harmonised meta-analysis' is published in *The BMJ* today.

More information: Dose-response associations between accelerometry measured physical activity and sedentary time and all-cause mortality: systematic review and harmonised meta-analysis, *BMJ* (2019). [DOI: 10.1136/bmj.l4570](https://doi.org/10.1136/bmj.l4570)

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