

Leisure physical activity is linked with health benefits but work activity is not

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The first large study showing that leisure time physical activity and occupational physical activity have opposite, and independent, associations with cardiovascular disease risk and longevity is published today in *European Heart Journal*.

"We adjusted for multiple factors in our analysis, indicating that the relationships were not explained by lifestyle, [health conditions](#) or [socioeconomic status](#)," said study author Professor Andreas Holtermann of the National Research Center for the Working Environment, Copenhagen, Denmark.

The World Health Organization (WHO) recommends [physical activity](#) during both recreation and work to improve health. Previous studies have suggested that occupational activity is related to an [increased risk](#) for heart disease and mortality but have been too small to fully explain whether this was due to the manual work or because employees had unhealthy lifestyles or [low socioeconomic status](#) (e.g. low level of education).

This study included 104,046 women and men aged 20-100 years from the Copenhagen General

Population Study with baseline measurements in 2003-2014. Participants completed questionnaires about activity during leisure and employment and were categorized as low, moderate, high, or very high activity for each.

During a median follow-up of 10 years, there were 9,846 (9.5%) deaths from all causes and 7,913 (7.6%) major adverse cardiovascular events (MACE, defined as fatal and nonfatal myocardial infarction, fatal and non-fatal stroke, and other coronary death).

Compared to low leisure time physical activity, after adjustment for age, sex, lifestyle, health, and education, moderate, high, and very high activity were associated with 26%, 41%, and 40% reduced risks of death, respectively. In contrast, compared to low work activity, high and very high activity were associated with 13% and 27% increased risks of death, respectively.

Similarly, after adjustments, compared to low leisure activity, moderate, high, and very high levels of leisure activity were associated with 14%, 23%, and 15% reduced risks of MACE, respectively. Compared to low work activity, high and very high levels were associated with 15% and 35% increased risks of MACE, respectively.

Professor Holtermann said: "Many people with manual jobs believe they get fit and healthy by their physical activity at work and therefore can relax when they get home. Unfortunately, our results suggest that this is not the case. And while these workers could benefit from leisure physical activity, after walking 10,000 steps while cleaning or standing seven hours in a production line, people tend to feel tired so that's a barrier."

While the study did not investigate the reasons for the opposite associations for occupational and [leisure time](#) physical activity, Professor Holtermann said: "A brisk 30-minute walk will benefit your

health by raising your heart rate and improving your cardiorespiratory fitness, while work activity often does not sufficiently increase heart rate to improve fitness. In addition, work involving lifting for several hours a day increases blood pressure for many hours, which is linked with [heart disease](#) risk, while short bursts of intense physical activity during leisure raises blood pressure only briefly."

Professor Holtermann's vision is to reorganize occupational activity so that it mimics the beneficial aspects of [leisure](#) exercise. Several approaches are being piloted, such as rotating between workstations on a production line so that employees do a "healthy mixture" of sitting, standing, and lifting during a shift. In another study, childcare workers play games together with children, instead of observing, so that both get their heart rate up and increase fitness. "We are trying to vary the tasks, give recovery time, or raise [heart](#) rate so there is a fitness and health benefit," he said.

Professor Holtermann concluded: "Societies need adults with sufficient health and fitness to work longer since the retirement age is increasing. We need to find ways to make active work good for health."

More information: Andreas Holtermann et al. The physical activity paradox in cardiovascular disease and all-cause mortality: the contemporary Copenhagen General Population Study with 104 046 adults, *European Heart Journal* (2021). [DOI: 10.1093/eurheartj/ehab087](#)

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