

Exercise Cuts the Risk for 13 Cancers

Liam Davenport | May 16, 2016

Higher levels of leisure-time physical activity are associated with a significantly lower risk of developing a number of cancers, the results of a pooled analysis of data from more than a million Europeans and Americans reveal.

The findings, [published online](#) May 16 in *JAMA Internal Medicine*, indicate that higher levels of physical activity reduced the risk of developing cancer in 13 of the 26 cancers reviewed.

For that group of 13 cancers, the risk reduction ranged from 10% to 42%.

The affected cancers were esophageal adenocarcinoma (hazard ratio [HR], 0.58), liver cancer (HR, 0.73), lung cancer (HR, 0.74), kidney cancer (HR, 0.77), gastric cardia cancer (HR, 0.78), endometrial cancer (HR, 0.79), myeloid leukemia (HR, 0.80), myeloma (HR, 0.83), colon cancer (HR, 0.84), head and neck cancer (HR, 0.85), rectal cancer (HR, 0.87), bladder cancer (HR, 0.87), and breast cancer (HR, 0.90).

The cancers with risk not positively affected by physical activity included those of the prostate and melanoma.

"These findings support promoting activity as a key component of population-wide cancer prevention and control efforts," say the researchers.

In an [accompanying editorial](#), Marilie D. Gammon, PhD, Gillings School of Public Health, University of North Carolina at Chapel Hill, described the findings as "exciting," because they "underscore the importance of leisure-time physical activity as a potential risk-reduction strategy to decrease the cancer burden in the United States and abroad."

She emphasizes the need for further research into the underlying mechanisms for the association between physical activity and cancer and into the critical timing of exposure to exercise, as well as the types and amounts of activity that have the most impact.

Lead researcher Steven C. Moore, PhD, MPH, National Cancer Institute, Bethesda, Maryland, told *Medscape Medical News* that three mechanisms have been proposed to relate physical activity to lower cancer risk.

The first, he explained, is via sex hormones. Previous studies have shown, for example, that estrogens occur in lower levels in physically active women. "The second hypothesis is related to insulin, which is that active people have lower levels of insulin, and insulin itself maybe a cancer risk factor," he said.

The third is connected to inflammation, with studies indicating that exercise is linked to lower levels of inflammatory markers, and that inflammation "is a general cancer risk factor."

Although it appears from the current findings that the relationship between physical activity and cancer risk is strongest for gastroesophageal and hematologic cancers, it was not possible to determine which of the hypotheses most lends itself to explaining the association.

Dr Moore said: "It's hard to pin it down exactly, because in the ideal study, you would want to have physical activity as well as those inflammatory factors measured and the cancer outcome, and nobody's done that study."

The findings nevertheless strengthen recommendations on minimum activity levels, because the message that exercise reduces cancer risk can be added to that for cardiovascular disease.

Dr Moore noted: "In terms of getting people to be active, it depends on the number of communities and the number of constituencies that are invested in pushing it as a public health message."

For him, the study "at least in part aligns the evidence for cancer with the evidence for heart disease."

Dr Moore said: "In other words, there's enough evidence now to suggest that physical activity may be an important part of cancer prevention and control messages, so that it can be pushed within that research community, and not just within that research community but perhaps also that advocacy community."

Study Details

For the analysis, the researchers pooled data from 12 prospective cohorts from Europe and the United States that included self-reported physical activity, yielding a total of 1.44 million individuals (median age, 59 years).

Because different measures of physical activity were used across the studies, the team converted activity to metabolic equivalents (METs), with exercise of moderate intensity defined as 3 or more METs. The median activity level was the equivalent of 150 minutes of moderate-intensity activity per week, or 75 minutes of vigorous intensity, or the equivalent combination.

Higher activity levels of leisure-time physical activity were associated with younger age, more education, lower body mass index (BMI), and lower likelihood of being a current smoker.

During a median follow-up of 11 years, there were 186,932 incident cases of cancer.

The researchers found that higher levels of physical activity were associated with an increased risk for prostate cancer (hazard ratio [HR], 1.05) and malignant melanoma (HR, 1.27). Further analysis showed that the latter was statistically significant only in US regions where there are higher levels of solar ultraviolet radiation (HR, 1.26).

There were suggestions of associations between increased physical activity and reduced risk for gallbladder cancer, small intestine cancer, and non-Hodgkin lymphoma.

It was estimated that physical activity was associated with an overall 7% reduction in the risk of developing cancer (HR, 0.93).

Although BMI reduced the association for several cancers, 10 of the inverse associations remained significant after adjustment. Smoking modified the association only for lung cancer.

Editorialist Dr Gammon told *Medscape Medical News* that the pooled analysis has strengthened the evidence for an association between physical activity and some of the rarer cancers. "It's really nice to be able to put it all together, because each of the individual studies were underpowered," she said.

She believes that the intensity and duration of physical activity needed to lower cancer risk is likely to be tumor specific. "For instance, it was so much easier for us to figure out that physical activity was related to colon cancer, but it was much, much harder to do it with breast, and I'm thinking it's possible that it could be related to dose and intensity."

She added: "I think we're going to need to do more individual type studies to try to really nail that down better, but right now, I would say the best evidence is what the [CDC is recommending](#)."

Dr Gammon concluded that it is "really hopeful" to have the possibility of "such a good strategy to be able to reduce the risk of developing cancers, because some of the cancers on that list are very rare and very deadly."

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