

Can Exercise Lower the Risk of Cancer Metastasis?

High-intensity exercise may deprive tumors of glucose, curbing their growth and spread.

April 6, 2023 By [Sukanya Charuchandra](#)

Exercise can significantly lower the risk of cancer metastasis, according to study results published in [Cancer Research](#). During exercise, organs in the body draw up more glucose, which may deprive tumors of fuel and limit their growth and spread. In both mice and humans, high-intensity exercise such as running appeared to use up sugar and starve tumors, thereby limiting metastasis.

While exercise is known to reduce the risk of cancer and its recurrence, the underlying biological process is not well understood. The lymph nodes, lungs and liver are common sites of metastasis, while muscles remain seemingly resistant to tumor spread.

“If so far the general message to the public has been ‘be active, be healthy’, now we can explain how aerobic activity can maximize the prevention of the most aggressive and metastatic types of cancer,” Carmit Levy, PhD, of Tel Aviv University in Israel, said in a [press release](#).

Levy and colleagues studied how exercise impacts these different tissues and interferes with cancer metastasis. For their study, the researchers used mouse models and analyzed human data.

In mice, exercise “reprogrammed” internal organs and increased their demand for nutrients. As the organs and muscles compete for sugar during intense exercise, there is less fuel available for growing tumors. Mice that exercised were significantly less likely to develop metastatic tumors in the lymph nodes, lungs, and liver.

“Examining the cells of these organs, we found a rise in the number of glucose receptors during high-intensity aerobic activity—increasing glucose intake and turning the organs into effective energy-consumption machines, very much like the muscles,” Levy said.

The researchers also looked at data from 3,000 people over 20 years, finding that exercise had an impact on cancer metastasis. Among people with tumors at lower metastatic stages, the impact of exercise was minimal. But exercise significantly decreased the likelihood of highly metastatic cancer. When people exercised for 120 to 150 minutes every week, metastatic cancer was reduced by 72%, compared with people who did not exercise regularly.

Study coauthor Yftach Gepner, PhD, of Tel Aviv University, noted that a higher intensity of exercise is required to burn sugar compared with the level of activity needed to burn fat.

“Our results suggest that healthy individuals should also include high-intensity components in their fitness programs,” he said. “We believe that future studies will enable personalized medicine for preventing specific cancers, with physicians reviewing family histories to recommend the right kind of physical activity. It must be emphasized that physical exercise, with its unique metabolic and physiological effects, exhibits a higher level of cancer prevention than any medication or medical intervention to date.”

Click here to read the study in [Cancer Research](#).

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