

Exercise as chemo-brain treatment

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Cancer patients might feel their best if they simply maintain or only slightly increase their physical activity throughout chemotherapy instead of letting it decline, according to a University of Rochester scientist who presented data at the largest meeting of oncologists in the United States.

Karen M. Mustian, Ph.D., M.P.H., spoke of a study showing that a walking program and gentle resistance-band training at home reduced chronic inflammation that's common among people with cancer receiving chemotherapy. The study's personalized exercise prescription also significantly reduced cognitive impairment – known as chemo-brain—among the 619 study participants.

"To think that a very simple, low-cost, self-directed exercise prescription

can create an anti-inflammatory response similar to a drug and protect against cognitive decline in people with cancer is innovative and very exciting," said Mustian, an associate professor in the UR Departments of Surgery and Radiation Oncology, Cancer Control Clinical Research Unit and a Wilmot Cancer Institute researcher.

"Sometimes patients are encouraged to take it easy throughout their treatments. It's often accepted that their [physical activity](#) will just naturally decline," Mustian said. "But our study demonstrates that we need to strongly encourage them to maintain or increase their activity compared to what they were doing at the beginning of chemotherapy."

Mustian's team developed a specialized program called EXCAP (Exercise for Cancer Patients) several years ago and have been evaluating it in clinical trials. At the American Society of Clinical Oncology (ASCO) meeting June 1, she presented findings from a phase III randomized study for early-stage cancer patients. Half received standard care (no prescribed exercise during chemotherapy) while the others received the EXCAP prescription. They wore a pedometer, walked daily, and used resistance bands as instructed.

At the start of cancer treatment, most [study participants](#) were walking about 4,000 steps a day, roughly the equivalent of two miles, which is considered sedentary. (Healthy people would need to walk about 5,000 steps daily to be low-active, 7,500 steps to be somewhat active, 10,000 steps to be active and 12,500 steps to be highly active.)

By the end of six weeks, however, the non-exercisers had dropped off to an average of about 3,800 steps (sedentary) but the exercisers were walking about 5,000 steps (low active). The EXCAP group also performed resistance band training five days a week for 10 minutes at a low to moderate intensity. The other group did not do any strength training. Non-exercisers not only lost mobility, but reported more brain

fogginess and memory problems, and they had higher levels of blood inflammation, according to tests conducted during the study. Another interesting outcome, Mustian said, is that the exercisers who received chemotherapy in two-week cycles (as opposed to different timing) reported the greatest physiological and psychological benefits from the EXCAP prescription.

Also at the ASCO meeting in Chicago, Mustian's colleague Michelle C. Janelsins, Ph.D., spoke to a large group of oncologists about her study confirming significant [chemotherapy](#)-related cognitive impairment among 366 breast [cancer patients](#), compared to a control group of 366 people who did not have cancer. Janelsins is leading the largest study to date investigating the impact of [cancer treatment](#) on cognitive function.

A UR assistant professor of Surgery and Cancer Control, Janelsins has discovered that [cognitive impairment](#) in breast [cancer](#) is influenced by neurotransmitter signaling and longevity genes and leads to increased inflammation. She recently received a \$2.3 million National Institutes of Health award to develop a mouse model and investigate treatments for chemo-brain.

Provided by University of Rochester Medical Center

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