

Exercise As Cancer Treatment?

by Lee Jones, PhD

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What can I do to reduce my risk of cancer or prevent my cancer coming back? This is often one of the first questions someone asks their doctor upon learning they might be high risk for cancer or were recently diagnosed. Although often not mentioned, for Dr. Lee Jones, exercise should be an essential part of this discussion.

Jones, who has a PhD in exercise science and physiology, directs a novel research program at Memorial Sloan Kettering Cancer Center focused on two areas:

1. Can exercise reduce the side effects associated with cancer?
2. Can exercise prevent cancer occurring in the first place or prevent it from coming back?

“During cancer treatment people are typically told to rest, and it’s quite possibly the worst advice we could be giving,” Jones says.

In his clinical trials, Jones has demonstrated that exercise can reduce the side effects of treatments such as chemotherapy or hormone therapy (for breast and prostate cancer), help people tolerate their cancer therapies better, and accelerate recovery after treatment. His program has already shown that exercise can prevent cancer as well as suppress cancer coming back.

He recalls one person who came to the lab five years ago. “He was young, late 40s or early 50s, and had been diagnosed with pancreatic cancer, which is typically a pretty grim prognosis. We did some assessments and prescribed a personalized exercise regimen. Typically a 10-20 percent decline in fitness is observed for someone undergoing chemotherapy—a decline typically seen in 10 to 20 years of normal aging! In this person we actually saw a 20 percent improvement.”

The patient recently had his five-year post-diagnosis anniversary. “Of course, many factors are contributing to the success in this example but I do believe exercise played an important part,” says Jones. “It’s pretty incredible.”

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Looking ahead, Jones says, “I think we’re on the verge of something very special.” Instead of the standard approach to clinical trials—have one group that exercises and one control group that doesn’t, and compare outcomes—he wants to get much more personalized. Because, he points out, “If you give the same exercise prescription to 50 people, you’ll get 50 different responses. We want to understand individual response at

different 'levels.' In other words, we want to understand everything from how a person is feeling down to what is happening at a molecular level in their cells. If you go for cancer treatment today, they'll sequence your tumor and give you therapies based on that. I think we need to take same approach with exercise. Can we customize exercise to maximize outcomes for cancer prevention and recovery?"

If anyone can answer that question, it's Jones. He has an impressive track record of securing competitive federal grants to fund a constant stream of research for the past 20 years and publication of more than 250 scientific papers in this area. A major key of the success of his program, he says, was a gift from a private foundation. A foundation in Norway gave him \$2MM of unrestricted funds when he first started. "Federal funding rates are less than eight percent at present," he says. "That gift allowed us to do the pilot projects, so then we had exciting things to demonstrate in order to get the federal grants, which then allows us to do the big, practice changing studies."

"Our goal is to change practice, such that when someone asks their doctor about things they can do, the doctor will be able to refer the individual to an exercise specialist to provide a tailored exercise regimen, in the same way it is done when someone is diagnosed with diabetes or heart disease."

Jones is happy to speak with anyone interested in knowing more about specific research projects or areas of exercise oncology. Find him at: mskcc.org/research-areas/labs/lee-jones or you can email him directly at jonesl3@mskcc.org.

Sample Exercise Protocol

The following is a prescription from one of Dr. Lee Jones's ongoing clinical trials testing the tolerability and efficacy of exercise in men with localized prostate cancer on watchful waiting.

STEP ONE

Evaluate current activity levels, BMI, prior medical history, current cancer stage and grade, prior cancer treatment (if applicable).

STEP TWO

Measure fitness levels using a stress test; measure glucose, blood pressure, and heart rate response at rest and during exercise, as well as heart function. (This is all done remotely in a person's home.)

STEP THREE

Design exercise prescription, tailoring exercise in terms of the number of exercise sessions per week, their intensity (based on how the individual responds to exercise in the stress test, but anywhere from 50% to 80% of baseline capacity), and duration of each session (anywhere from 20 to 90 minutes in duration per session). Based on these factors, the total amount of exercise per week could range from 90 minutes per week to 300 minutes per week.

STEP FOUR

Implement exercise. All exercise sessions are performed on a treadmill that is sent to the person's home with each session monitoring in real-time via Zoom.

STEP FIVE

Continuously evaluate response via heart rate and glucose that are collected every 15 mins 24/7 together with repeat assessment of fitness periodically throughout the prescription.

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