

Yale CANCER
CENTER

answers

WNPR Connecticut Public Radio



Hosts

Edward Chu MD

Chief of Medical Oncology

Kenneth Miller MD

Director of Supportive Care

Physical Fitness and Cancer

Guest Expert:

Melinda Irwin, PhD

*Assistant Professor of Epidemiology and
Public Health*



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Welcome to Yale Cancer Center Answers with Dr. Ed Chu and Dr. Ken Miller. I am Bruce Barber. Dr. Chu is Deputy Director and Chief of Medical Oncology at Yale Cancer Center and he is an internationally recognized expert in colorectal cancer. Dr. Miller is the Director of the Connecticut Challenge Survivorship Program and he is also the author of "Choices in Breast Cancer Treatment." If you would like to join the discussion, you can contact the doctors directly at canceranswers@yale.edu or 1-888-234-4YCC. This evening, Dr. Ken Miller welcomes Dr. Melinda Irwin. Dr. Irwin is Associate Professor of Epidemiology and Public Health at Yale, and a leading researcher in the connection between exercise and cancer prevention.

Miller Melinda, let's dive right into this. What is the connection between exercise and cancer?

Irwin Starting in the mid 90s, around 1995, one of the first papers came out looking at physical activity in the prevention of breast cancer. It showed that women who were physically active, roughly 2 to 3 hours per week, in their premenopausal years and their postmenopausal years, had about a 30% reduction in breast cancer. That was just 10 to 15 years ago, and in this past 10 to 15 years we have had so many research studies come out looking at how physical activity is associated with not only preventing certain cancers, but improving prognosis as well. The specific cancers where there is a strong association with physical activity are breast cancer, colon cancer, a little with prostate cancer and endometrial cancer, but mostly breast and colon cancer. There is a strong relationship, and research in the last three years or so has been looking at physical activity performed roughly two years after diagnosis, so after finishing your treatment, as having a strong association with improving your prognosis and survival from cancer, or any other cause of death.

Miller I have to say, it has been very exciting for me as a clinician all of a sudden having this sense that we can do something for women other than medication. Let me ask you more about this. You are saying, that if a woman has had cancer, she can improve her chance of survival and living a normal life by exercising?

Irwin Exactly, and we just recently published a study showing that women who reported walking, a simple activity such as brisk walking about three days per week for about 30 minutes per session, had approximately a 50% reduction in death. It could be related to weight control or certain hormonal mechanisms. We know that certain sex hormones, estrogens and androgens, are strongly related to breast cancer, so it could be that those hormones are reduced with physical activity levels. Insulin and insulin-like growth factors and certain inflammatory markers may be reduced with exercise, but also of importance is the fact that exercise is associated with

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improvements in quality of life. For women who may be at higher stages of diagnosis, or who are feeling really fatigued from the treatment, exercise has been shown to improve their quality of life, decrease fatigue, and decrease depression and anxiety. There are benefits related to just your day-to-day quality of life, but also your survival.

Miller It is somewhat ideal that you have this intervention that doesn't have many side effects, but has tremendous benefit.

Irwin In a study that was recently published, we not only showed an improvement in survival from breast cancer, but survival from other causes such as cardiovascular disease and diabetes, because exercise is related to some similar mechanisms of those diseases as breast cancer is, so it is really associated with a multitude of benefits.

Miller You have talked about a number of possible mechanisms telling us why exercise has an impact. Do you have a leading hypothesis in terms of what the mechanism is?

Irwin On one hand it could be through weight control, because there have been studies showing that a higher body mass index, or higher weight at diagnosis, is associated with poor prognosis, as well as those who gain weight after their diagnosis. While physical activity may not be associated with a lot of weight loss, it is strongly associated with weight maintenance over time, or less weight gain over time. So, it may be through the weight control. However, a study that we also recently finished here at Yale, the Yale Exercise and Survivorship study, showed a strong effect of exercise on insulin and insulin-like growth factors in breast cancer survivors, and we know insulin and insulin-like growth factors are mitogenic; they increase the number of cells. For example, in breast tissue, by decreasing those hormones, it may be improving prognosis.

Miller It's fascinating. We always sort of blame estrogen, but to think that insulin or insulin-growth factors may have an impact as well.

Irwin Exactly.

Miller I think people in the audience may be wondering, so I will ask for them, do you think that exercise has the same kind of influence for other cancers?

Irwin Most of the research has been in breast cancer, but there have been, what we call, observational studies done for other cancers such as colon cancer, endometrial, and prostate cancer. Observational meaning we have

participants, men and women, complete questionnaires asking them about their physical activity performed in the past six months, or throughout their lifetime. Then you correlate that, or you look at those physical activity levels and how it associates with their risk of developing, say colon or prostate cancer, or among those who have been diagnosed with colon cancer how it is associated with survival. There have not been any interventions looking at how exercise may favor, or change certain mechanisms or surrogate markers of say, colon cancer or prostate cancer. We definitely exercise in breast cancer, most of the studies are done in that area and more research does need to be done in colon and prostate and other cancers, but the observational studies are very encouraging showing a strong benefit of physical activity on those cancers.

Miller Really encouraging. I want to ask about people that are receiving treatments, sometimes this is chemotherapy, radiation or hormonal therapy, can those cancer survivors exercise as well?

Irwin Yes, we conducted one study here where we recruited women who were diagnosed with breast cancer. Within two months of their diagnosis they were recruited into a home-based exercise program where we administered the intervention via the telephone. Our exercise trainers and psychologists called the participants and motivated them to exercise daily, even if it was just 10 minutes a day walking to the mail box, or walking a couple blocks down the street, and working up to about 30 minutes a day ideally, five days per week. We did show that women who were randomized to the exercise group were able to exercise during treatment, during chemotherapy and radiation treatment, more so than those randomized to the control group. It was just one phone call a week that lasted about 20 to 30 minutes, and in fact, a lot of women reported that they preferred to be counseled on exercise soon after their diagnosis. A lot of clinicians, oncologists, think that perhaps it is better to wait till after they finish treatment, but the patients are telling us they would prefer to receive information on not just physical activity, but diet and weight control soon after their diagnosis.

Miller Along those same lines, people come from all kinds of backgrounds when it comes to exercise habits. Does someone have to exercise vigorously or train really hard either during or after treatment in order to have this wonderful impact on long-term survival?

Irwin No, in fact, studies show us that the biggest benefit is among those who have not historically exercised regularly at all, to increasing just a little bit. Something is better than nothing. Those who have done no exercise

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regularly, who add just 15 minutes, three days per week, have actual improvements noticed. However, there is a dose response effect with more exercise being associated with more benefit. The recommended amount is about 30 minutes, five days per week.

Miller We have an e-mail from Susan who lives in Fairfield. She writes that she had breast cancer this year, and has never been a person who exercises. She says she is 40 years old and a little bit overweight. She would like to know what you would recommend, what should she start out with?

Irwin I think the first thing to do is go get some good walking shoes and don't get intimidated or set your goals too lofty. Starting with something, maybe 15 minutes a day, everyday, would be a good program to start with. Then work on increasing the duration, so from 15 minutes to 20 minutes and so on, then perhaps increase the frequency of the number of times per week. Most importantly, the American College of Sports Medicine and the American Cancer Society, have just developed an exam for personal trainers to become certified in working with men and women diagnosed with cancer. They work on counseling them on how to improve their physical activity levels, and there are already in Connecticut a number of personal trainers who are certified to work with these cancer survivors. Certain health insurance companies are reimbursing patients if they train with these personal trainers. If you contact the American College of Sports Medicine at www.acsm.org, you can find out information on how to find a personal trainer in your neighborhood who can work with you.

Miller Absolutely wonderful. I will put a little plug in here for insurance companies to cover this, because if we can non-pharmacologically, without medications, lower the risk of recurrence and improve quality of life, that really sounds like a winner.

Irwin I agree completely. In the research studies that I have done, within a month the women feel an increased strength. They can climb a flight of stairs, carry the groceries, rake leaves, and they feel empowered and physically stronger; that helps them continue their treatment. There have been a couple studies showing an improved chemotherapy completion among those who exercise versus those who do not. Aside from treatment, these women are feeling more empowered and are able to carry out tasks of daily living, even if there is no potential benefit with survival, their day-to-day life is improved.

Miller I want to talk about safety a little bit because people raise the concern that it is unsafe for them to exercise.

- Irwin In some cases, if you are having radiation treatment, you want to avoid maybe certain exposure to certain areas on the skin; sun exposure or swimming. You would not want to perhaps go in a swimming pool if you are receiving radiation. Also, with certain catheters you would have to be careful. You want to decrease any risk for infection, but if you have finished your treatment and you are feeling that you are ready and able to start an exercise program, there is really no major risk. Of course if you are going to be doing really high intensity exercise, such as training for marathon running or something, perhaps definitely working with your trainer is best. Also, with strength training there have been recent studies that have shown that there is no increase in lymphedema, for say breast cancer survivors. There is no increase in lymphedema with strength training or weight training, resistance training. Exercises like strength training helps to improve the range of motion and I recommend those exercises. Certain women are unable to reach the top shelf in their kitchen anymore because of lymphedema, so a strength training program or stretching program to begin with may help with increasing range of motion.
- Miller I want to address this directly in terms of the lymphedema mystery. There are a lot of rumors and thoughts and beliefs out there. Are there any limitations, or recommendations that you would give to women, to reduce the risk of lymphedema?
- Irwin You want to focus on having a lighter weight in the beginning, and more repetitions. So starting with almost no weight and just practicing, mimicking certain exercises that you would do such as a bench press or an overhead press or a pull-down type of exercise. You're learning what those exercises are starting with no weight, and then going to very light weight with a high number of repetitions, then slowly increasing the weight. This is rather than a real strength training where you would be doing heavy weight and let's say 10 repetitions. Something more in the order of 12 to 20 repetitions of weight that you can lift would be what I would recommend.
- Miller If we look at other risks that people have in life, such as the risk of heart disease or other illnesses, do the recommendations that you would give to someone with cancer also apply to those other conditions?
- Irwin Since the research on physical activity in cancer is really in its infancy, there is a lot more research on physical activity for cardiovascular disease. The current recommendations for cancer are actually based on cardiovascular disease. Right now, the research in cancer is looking at, is that recommendation accurate for cancer or should it be less? Maybe it

does not have to be 30 minutes, five days per week, does it only have to be 30 minutes, three days per week? Does it have to perhaps be more exercise toward a higher intensity? The research so far is telling us that it is a very similar recommended amount as cardiovascular disease and diabetes.

Miller So it helps you in everyway, hopefully. I am here with Dr. Melinda Irwin who is Associate Professor of Public Health and Epidemiology. We are talking about exercise and cancer and we are going to take a short break for a medical minute. Please come back and join us.

Medical Minute

Breast cancer is the second most common cancer in women. About 3000 women in Connecticut will be diagnosed with breast cancer this year but earlier detection, noninvasive treatments, and new therapies are providing more options for breast cancer patients and more women are able to live with breast cancer than ever before. Beginning at age 40, every woman should schedule an annual mammogram, and you should start even sooner if you have a risk factor associated with breast cancer. Screening, early detection, and a healthy lifestyle are the most important factors in defeating breast cancer. Clinical trials are currently underway at Federally Designated Comprehensive Cancer Centers such as the Yale Cancer Center to make new treatments not yet approved by the Food and Drug Administration available to patients. This has been a medical minute and you will find more information at www.yalecancercenter.org. You are listening to the WNPR Health Forum from Connecticut Public Radio.

Miller Welcome back to Yale Cancer Center Answers. This is Dr. Ken Miller and I am joined today by Dr. Melinda Irwin from Yale Cancer Center. We are talking about exercise and cancer. Melinda, we have talked a lot about breast cancer. I know you also have an interest in ovarian cancer exercise. Can you tell us what you are doing with that?

Irwin As I mentioned earlier, there has been a lot of research done with exercise in breast cancer, and interestingly, ovarian cancers share similar mechanisms to breast cancer. Estrogen is thought to be a strong risk factor for ovarian cancer, but there has really been nothing looking at the role of physical activity in ovarian cancer. There was a recent paper published looking at physical activity performed after ovarian cancer, in which women who exercised had a higher quality of life, less depression and less anxiety, and this is important given that quality of life is definitely compromised in women diagnosed with ovarian cancer. A study that I am interested in doing, and I am hopefully going to receive funds from the National Cancer Institute, will look at women, who within six months of

their diagnosis of ovarian cancer are randomized to an exercise group, or usual care group, and we will look at how a six-month home and gym based exercise program could improve their quality of life. There was one study recently that showed that weight may be associated with a poor prognosis for ovarian cancer. Dr. Gil Mor, here at Yale University, has looked at certain proteins and how they are associated with prognosis, leptin, insulin-like growth factor, prolactin, and some of these hormones also may be modified with exercise. In this six-month exercise program, we will also look at how exercise can perhaps favorably change some of those biomarkers or surrogate markers of ovarian cancer prognosis.

Miller In short, in a study like this, you would not be able to look at the impact in terms of the risk of relapse, but you are going to look at things that are somewhat related to that.

Irwin Exactly. Ultimately we could look at survival as the end point where we would recruit a larger number of women into the study and follow them longer, but I think first we need to show if exercise is feasible after a diagnosis of ovarian cancer, and what exercises do ovarian cancer survivors prefer doing and is it associated with improving quality of life? And secondly, is it associated with favorably changing some of these biomarkers, surrogate markers, of survival? If we find an association with all of those surrogate markers, then the next study would be to look at improving disease-free survival.

Miller Terrific. Another symptom that women complain of who are receiving treatment for breast cancer with drugs such as Arimidex, an aromatase inhibitor, one of the symptoms is arthralgias; they say their joints ache and their muscles ache. In fact, let me pose it as a question. When you talk to women who are taking these medicines, how do they describe it to you?

Irwin Within two months of taking these aromatase inhibitors they feel like they have aged abruptly, aged overnight, and it is really frustrating to them and it is a very common symptom. About 50% of women report this joint pain, or musculoskeletal pain, and it is painful to the point where they want to stop taking this hormone therapy. Of course we do not recommend that because large clinical trials, adjuvant trials, have shown a strong benefit of these hormone therapies on improving survival. We definitely want women to keep taking these hormone therapies. However, if they have some side effects that are causing a lot of pain everyday, then it does not improve their quality of life. I will actually be starting a study looking, once again, at exercise in improving arthralgia and other side effects of aromatase inhibitors such as bone loss, which is related

to osteoporosis and fractures. We hypothesized that exercise will decrease arthralgia, or joint pain, similar to what it does for rheumatoid arthritis, osteoarthritis, or even fibromyalgia. There have been a number of studies among men and women with fibromyalgia showing a strong benefit of exercise. It is a similar mechanism, perhaps, with women taking aromatase inhibitors where we assume that increasing their muscle mass, increasing their cardiorespiratory fitness and their blood flow, may improve or attenuate the joint pain. We also know that in men and women without cancer, who exercise, it improves or maintains bone mass over time. As we age, unfortunately, we lose bone mass and so the goal would be to maintain bone mass. Unfortunately, sometimes taking these hormone therapies, may be associated with bone loss because of the dramatic decrease in estrogen levels. Estrogen helps with bone maintenance. Exercise may maintain bone mass, which also will decrease the risk of osteoporosis and fractures. What happens when diagnosed with cancer, a lot of these women not only go through chemotherapy and radiation, but then they are recommended to take certain hormone therapies. Then, because of the side effects of those hormone therapies, they may have to take certain drugs like Boniva that help maintain bone mass, or that may decrease inflammation of their joints, so they end up taking too many pills a day.

Miller And who wants to do that?

Irwin No one. I enjoy researching the role of exercise because I believe it is the one pill, which is 30 minutes daily, of just brisk walking, that can improve not only your survival from breast cancer and other cancers, but decrease the side effects from some of these hormone therapies and other adjuvant treatments.

Miller I want to ask you about the dose not just of exercise, but of encouragement. Some of it is because of you personally, but I now talk to women about exercise. I talk to them about nutrition also, but I do not live in people's houses, I cannot call them up. Have you looked at how much reinforcement is necessary to get people to do things?

Irwin The observational research shows a strong association among those going from nothing to something. Even if you start with as little as 5 or 10 minutes a day just to get you started, as mentioned, a dose-response effect shows greater amounts of exercise are better, but if you are having a really tough time starting an exercise program, the first thing is get those sneakers and put them on and just walk around the house. Sneakers make you want to walk more than walking around in other types of shoes.

Another great thing would be to purchase a pedometer. You can find them in a lot of different stores or online. There are a number of different websites that sell them and they are only about \$15. Put that pedometer on and it measures how many steps you walk in a given day. Let's say you walked 2000 steps on a certain day, and that is just what you regularly do, your goal for the next day would be to try to walk 3000 steps, so increase at 1000 steps. Roughly, 2000 steps is about a mile a day, which should take some people 15 to 20 minutes if they are walking briskly. If you can set a goal to increase 500 to 1000 steps per day, that is a good way to measure and it is very easy to measure. You wear the pedometer right on your waistband and you can look at it every hour, or every half hour to help motivate you to increase your walking.

Miller I did it earlier this year and it is sort of fun, because I set a goal at one point of 10,000 steps, which is a little challenging some days, but the steps actually mount up pretty quickly.

Irwin Yeah, it is definitely hard to get to 10,000 steps, and that is the recommended amount, but it is tough to get to unless you do a structured, say 30-minute, bout of exercise. If you do not do a structured bout of exercise, try to increase your walking just by taking the stairs instead of the elevator, parking a little bit further from your office, or walking to the market a couple blocks down the street. Just trying to do that a little bit each day definitely helps.

Miller I want to ask you about some of the research you are doing, that I am actually involved with too. For cancer survivorship there are 14 or 15 programs in the United States, and growing, do they make a difference?

Irwin That is what we are looking at. As you know, Yale Cancer Center has a survivorship program called the Connecticut Challenge Survivorship Program where men and women diagnosed with cancer can come to Yale Cancer Center. It is on Monday afternoons right now and it is geared towards one visit, but follow-up visits if needed are available. Patients come and they see four different counselors on nutrition, physical activity, stress management, and also an oncologist. What I am interested in looking at is if this one visit after completing treatment is enough to initiate an exercise program, maintain an exercise program, or is there more that is needed from a survivorship program, may be a 12-week program or a 6-week program where patients receive counseling more regularly. We are starting to see if this program is effective in changing physical activity levels, maintaining weight and improving quality of life. If this is shown, hopefully more hospitals around the country will establish cancer survivorship programs like the cardiac rehab programs that were

initiated back in the 1980s. It used to be that men and women that had a heart attack were told to go home and rest, but research showed that that was the worst thing that they should do, and that they should immediately start an exercise program, so cardiac rehab programs were initiated in many hospitals around the country. They were a similar kind of 12-week or 3-month type of program, and right now, the research is showing a similar benefit of exercise on cancer prognosis, yet the cancer survivorship programs, or the cancer rehab programs, are not as common as the cardiac rehab program.

Miller If we step back from this, the percent benefit of exercising after a heart attack, if someone could put a number on it, it looks like the benefit in terms of cancer may actually be the same percentage. Is that true?

Irwin Similar, perhaps even stronger depending on if people go for screening and they are diagnosed at an earlier stage of disease; the benefits may be stronger then. Sometimes when you have had a heart attack, unfortunately, it is a little late in the game so maybe the benefit of exercise may not be as strong as with cancer. It is interesting to me that there are so many programs out there for cardiac prevention or treatment, and not as many for cancer or survivorship or rehab. I am hoping that the research that we are doing together here at Yale will motivate other hospitals and cancer centers around the country to establish survivorship programs and that health insurance companies will follow in reimbursing patients for the survivorship programs, and if they just want to initiate working with a counselor on their own as well.

Miller I will be nosy for a minute. What do you do for exercise?

Irwin I like to run. I have two young boys, so it is something I can do very quickly. I can just open the door and go outside for about a 30- to 45-minute run. My goal is to do it about four times per week. The weekends are easier for me to get my exercise, it's a little bit tougher during the week, but I have to practice what I preach, so I do about four times a week of running, and not a fast pace. I am slow now, well over the 9 minute per mile mark.

Miller I think that was a goal I never achieved, but good for you. Melinda, let me ask you, we are going to wrap up pretty soon, but you mentioned resistance. What kinds of training are there for that, I would love to have the people in the audience hear the ideas?

Irwin Swimming is a great exercise especially if you have joint pain or another kind of arthritis, or if you are overweight. Swimming is a good program to

begin with and there are water aerobics too that you can do. Of course walking is a very good program to do and cycling or stationary bicycling. There are recumbent types of bicycles that a lot of people may have knee pain, they prefer those types of bicycles, and you know, believe or not, you can actually call a lot of, look online, and call stores and you can rent some of these pieces of equipment in your house for \$20 or \$30 a month and get some of the benefits, but I think walking is the number one best exercise that you could do.

Miller Any final bits of advice?

Irwin Simply that something is better than nothing, and hopefully that will encourage you to go out there and start an exercise program today.

Miller Terrific, I hope everybody heard that and please do something. You have been listening to Yale Cancer Center Answers. We would like to thank you for listening, and Melinda, I want to thank you for being on the program.

Irwin Thank you.

Miller Until next week, this is Dr. Ken Miller from Yale Cancer Center wishing you a safe and healthy week.

If you have questions for the doctors or would like to share your comments, go to www.yalecancercenter.org where you can also subscribe to our podcast and find written transcripts of past programs. Next week, you will meet Paul Ridley who joins Dr. Ken Miller to talk about Row for Hope. I am Bruce Barber, and you are listening to the WNPR Health Forum from Connecticut Public Radio.