

Yale CANCER
CENTER

answers

WNPR Connecticut Public Radio



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Yale Cancer Center Answers

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I am Bruce Barber and this is Yale Cancer Center Answers with Drs. Ed Chu and Ken Miller. Dr. Chu is Deputy Director and Chief of Medical Oncology at Yale Cancer Center and an internationally known expert on colorectal cancer. Dr. Miller is a medical oncologist and the Director of the Connecticut Challenge Survivorship Clinic. Ken specializes in pain and palliative care. If you would like to submit a question about cancer, please email us at canceranswers@yale.edu or you can make a phone call 1-888-234-4YCC. If you are interested in listening to past editions of Yale Cancer Center Answers, each segment is posted on the Yale Cancer Center website at www.yalecancercenter.org. This evening Ed and Ken discuss exercise in cancer prevention with Dr. Melinda Irwin, Assistant Professor of Epidemiology and Public Health at the Yale School of Medicine and a member of the Yale Cancer Center.

- Chu Let's dig right in. There is a lot of interest in how exercise is important for good health, but how does exercise and physical fitness relate to cancer in terms of either causing or reducing the risk of cancer?
- Irwin There have been over 50 to 100 observational studies showing a benefit of physical activity in reducing risk for certain cancers; specifically breast and colon cancer. The evidence is strongest for those two cancers and the amount of physical activity necessary is only about 2 to 3 hours per week of moderately intense activities, such as brisk walking. That amount of physical activity is associated with about a 30% to 40% reduced risk of developing breast or colon cancer in men and women. Recently, there has been some exciting research showing a benefit of physical activity after being diagnosed with cancer. That amount of physical activity improves your prognosis, potentially reduces the risk of recurrence as well as increasing survival. Those who may not have been physically active before their diagnosis with say breast or colon cancer, that begin an exercise program show evidence of reducing recurrence.
- Chu Let's take a step back, what are the general recommendations for exercise for the general public, not even a patient with cancer or a cancer survivor, but an average individual here in the United States?
- Irwin Currently, the recommendation is about 150 minutes per week of moderate intense activities. That 150 minutes could be looked at as 30 minutes, 5 days per week of something like brisk walking. That is based more on cardiovascular disease prevention. Currently there really is no recommended amount for cancer prevention and that is where a lot of the research is currently looking. How much exercise is needed to prevent cancer?
- Miller The exercises someone does for cardiovascular health, would you expect they could have the same impact on cancer risk?

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- Irwin Perhaps, yes. Some of the mechanisms that lead to risk of cardiovascular disease may be similar for cancer, such as certain hormones like insulin levels or estrogens. Some research has shown that exercise may have to be a little bit more intense than a moderate intense activity to see a favorable change in those hormones, but some other research has shown that is not the case, that brisk walking and moderate intense activity is enough to see a benefit. That is why it is the same recommendation as cardiovascular disease right now.
- Chu Would you recommend that an individual who either has been given a diagnosis of cancer, or who is a cancer survivor, go to a gym and seek out a personal trainer to try to help define exactly what type of exercise is beneficial?
- Irwin It really depends on where that person is in their treatment. If they have just been diagnosed and they are about to begin their adjuvant treatment, chemotherapy or radiation, and they have never exercised before, or in the past 6 months or year, it may be a smart move to wait till they are done with their treatment to join a gym and maybe seek out a personal trainer. If they have completed their treatment, or are at the end of treatment and have exercised regularly in the past, then yes, they should maintain their exercise program during the treatment or initiate a program immediately after.
- Miller It is a fascinating topic. Let's get into the mechanism a little. So people are exercising and they feel good, but how does that have an impact on the body and cancer risk as best you can tell?
- Irwin If we think about something like breast cancer in postmenopausal women, one of the strongest risk factors for breast cancer is estrogen. In postmenopausal women they stop producing estrogen in their ovaries, but they continue to produce estrogen in their fat tissue. One mechanism may be that exercise is associated with weight maintenance or weight loss, and losing that body fat is associated with a decrease in estrogen concentrations which, therefore, may decrease the risk of getting breast cancer or decrease the risk of a recurrence. That is one mechanism. Another involves insulin, insulin like growth factors and immune functioning where exercise may change what we call surrogate markers or biological markers, related to cancer. We know that these markers are strongly related to cancer so if exercise changes those factors, then it may also improve the prognosis.
- Miller You had mentioned insulin before. Can you say more about that?
- Irwin There have been many studies that show exercise acutely and chronically decreases insulin levels in healthy men and women. Immediately after exercising, insulin levels are lowered. If they exercise regularly, that five times per week, over time their insulin levels will decrease and stay at this lower level.

Insulin is a mitogenic growth factor that increases cell proliferation, say in the breast or in the colon, so if exercise can decrease insulin levels, it will decrease the cell growth in the breast or colon tissue.

Chu It is interesting, there are now a number of studies showing that is only for breast cancer and for colorectal cancer. There are increased levels, not of insulin but insulin like growth factors, which do tend to stimulate the growth of the tumors.

Irwin One of our recent studies that we just completed was a 6 month exercise program in postmenopausal breast cancer survivors who are two to three years out of their diagnosis. We had these woman exercise 30 minutes 5 days per week, most of them did brisk walking on a treadmill or in their neighborhood, and we found after 6 months that there were strong clinically significant decreases in insulin like growth factors, which hopefully will relate to an improvement in their prognosis.

Miller We are hearing about estrogen and weight loss and insulin growth factors in women with breast cancer. One would have predicted you would have more impact of diet and exercise on the women with positive estrogen receptor but did that turn out to be the case?

Irwin Some of our studies are observational studies where we look at the association of activity, on say prognosis. In some studies we have observed an effect only among those who are hormone response positive, or ER-positive. Some studies have shown an effect only with ER-negative, which is sort of exciting because women who are ER-negative, certain hormonal therapies aren't available for them. Something like exercise or diet is a great thing for them to improve their prognosis. Currently we do not know if it is only ER-negative or ER-positive, but perhaps for both ER-positive and negative.

Chu Melinda, what is known about the emotional psychological benefits of exercise?

Irwin Great question. The first studies were done looking at that role of exercise after cancer diagnosis. Most of the studies have looked at how exercise may improve fatigue, nausea, depression, and overall quality of life during treatment and after treatment. They showed a strong relationship between those who exercise and not being as tired or depressed. That is very consistent evidence showing a favorable effect of exercise on quality of life.

Miller I received an email from a young woman named Amie who lives in Southington. She says that she has breast cancer and has never been a person who exercises. Her doctors tell her it is important and she wants to know where she should start.

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- Irwin Well first get a good pair of walking shoes. A lot of people say that they're just too tired to exercise so I tell them to just put the sneakers on and take a walk to the mailbox. Once you start that walk, even if its 1 minute, then you can say "okay I am going to walk 5 minutes down the street", and before you know it that 5 minutes turns into 10 minutes, then 30 minutes and you are doing the recommended amount. If you feel that you need more of a social support, find a friend who may exercise and schedule a time to meet with him or her and go for a walk, or hopefully family members will be interested in starting an exercise program. Hopefully, with a bit more work, you can work with a personal trainer and have that commitment to schedule time to make sure that you participate in the exercise program.
- Chu Are there any activities other than the brisk walking that you can recommend for listeners out there?
- Irwin I say brisk walking because that's something anyone can do at a low cost and does not require a lot of effort. But any kind of aerobic activity that gets your heart rate up to about 40% to 60% of your maximal heart rate, which is 220 minus your age, is good. That may be bicycling, or using any of the exercise equipment at health clubs, swimming, tennis, anything that's continuous activity. You want it to be continuous, not really stop and go. There is some evidence of strength training being associated with improved prognosis but most of the research is focused on aerobic exercise right now.
- Chu Is there any activity that you would not recommend to a patient who is receiving chemotherapy treatments or who has just finished their treatment?
- Irwin I would say swimming because if an individual is receiving radiation therapy swimming may not be something they want to do while they are undergoing radiation.
- Chu Why is that?
- Irwin Exposure of the radiation to chlorine in the pool may cause some burning where they received the radiation. Also, if they have any kind of ports or catheters, you want to avoid any kind of infection. Some used to think that it was not healthy to go to a health club and be around other individuals in an environment where everyone is hot and sweating, but there has been evidence showing that does not really affect their rates of infection.
- Miller For patients who are complaining about a lot of fatigue after the chemotherapy, do you have any recommendations for them?

- Irwin Focus on the activities of daily living, such as grocery shopping and laundry. Do not set your goals too high and think that you always have to do the 30 minutes everyday. Maybe do 5 minute bouts one day then try two 5-minute bouts, then three 5-minute bouts. Start slowly and do not set your expectations too high. Keep a journal with monthly goals of what you want to achieve.
- Miller We would like to remind you to email your question to canceranswers@yale.edu. We are going to take a short break for a medical minute. Please stay tuned to learn more information about exercise and cancer prevention with Dr. Melinda Irwin from the Yale Cancer Center.

Medical Minute

This year over 170,000 Americans will be diagnosed with lung cancer. More than 85% of lung cancer diagnoses are related to smoking, and quitting even after decades of use can significantly reduce your risk of developing lung cancer. Each day patients with lung cancer are surviving. Thanks to increased access to advanced therapies and specialized care. New treatment options and surgical techniques are giving lung cancer survivors more help than they ever had before. Clinical trials are currently under way at the Yale Cancer Center, a federally designated comprehensive cancer center, to test new treatments for lung cancer and patients enrolled in these trials are given access to newly available medicines, which have not yet been approved by the Food and Drug Administration.

This has been medical minute. For information, go to yalecancercenter.org.

- Miller Welcome back to Yale Cancer Center Answers. This is Dr. Ken Miller and I am here with my co-host Dr. Ed Chu and Dr. Melinda Irwin from the Yale Cancer Center discussing the impact of physical fitness on cancer and cancer survivors.
- Miller Melinda, you have done some fascinating research on exercise in cancer survivors. Can you tell us what you have been working on?
- Irwin Most of the research that has been done is observational research, so they are not trials. Studies have looked at women who reported a low physical activity level, say 10 years ago, and unfortunately some developed a breast cancer. Those who had higher levels of activity had a lower risk. From that we want to know what the mechanisms are, what caused those who are active to have a lower risk of developing cancer? We've done clinical trials where we randomize women with breast cancer who have not regularly participated in exercise and put them into a 6-month or a year-long exercise program and follow up at 3, 6, 9 and 12 months.

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We take blood draws and look at how exercise favorably changes certain hormones; estrogens, the insulin growth factor, cytokines and body fat levels. We have been able to show that exercise does favorably change some of these biological markers. That is working out what the mechanisms are. The next study, or trial, that really needs to be done is looking at if exercise can in fact decrease recurrence and increase survival. A randomized trial following women newly diagnosed with breast cancer for say five years. We will randomize them into women who exercise and those who don't. We will see if those who participate in exercise have less risk of recurrence or a higher survival rate. Those findings will extend the literature on what is recommended in terms of the physical activity necessary for improving prognosis. Currently it is just based on observational research, but the flaw with observational research is determining if other behaviors such as diet or the fact that those who exercise may be smoking or drinking less has an affect. We need to do a trial to isolate exercise.

Chu This is a trail looking at women with breast cancer after treatment or women from the time of diagnosis including treatments?

Irwin A little bit of both. Prior to this I did a lot of research in women who had high risk for breast cancer but were healthy individuals. My current research is looking at women who have been diagnosed with breast cancer. One study was performed during treatment and another post treatment, so women were about one to five years post diagnosis. Those were the trials looking at what the mechanisms are. This trial will look at recurrence and survival in individuals once they finish their treatment, usually within 9 to 18 months after their diagnosis and they are in the trial for about 5 years to look at their risk of recurrence and survival.

Miller With that group what will be the expectation about what exercise they will be doing?

Irwin Based on the current recommendation that we have right now, we want at least the 30 minutes 5 days per week. However, we are going to recommend that they do 45 minutes knowing that not everyone always adheres to the 30 minutes. If we recommend the goal of 45 minutes then hopefully most will do at least the 30 minutes and maintain that moderate intensity aerobic physical activity. I also have some new research looking at some of the side effects of the hormonal therapies. A lot of postmenopausal woman with ER-positive breast cancer are put on certain aromatase inhibitors that have negative side effects such as joint pain or hot flashes. I am interested in looking at if exercise can favorably decrease some of those side effects because unfortunately these side effects are causing some women to stop taking their hormonal therapy. If exercise can decrease the side effects, hopefully women will stay on those hormone therapies, which are known to strongly improve the prognosis.

- Miller As you mentioned nutrition obviously plays a key role. How do you control the diet for each of these patients?
- Irwin It is tough because our interest is in looking at physical activity as an independent factor, but we also recognize that there are a lot of studies currently going on that show the favorable affects of diet. What we tell our participants is that if they want to change their diet they can, but we do not provide them nutrition counseling. However, every four months they receive a newsletter from us with diet information and tips to follow based on the National Cancer Institute dietary guidelines. Any information that is important for them to know about once they are finished with the study we provide to them. At baseline and at the follow-up assessments we do measure their diet so that we can account for any changes that may have occurred. But since we will not be intervening with their diet, a lot of these women will not change their diet. We will be able to look at the role of exercise independent of any other behavioral changes.
- Miller How frequently will you be following and monitoring these patients while on the trial?
- Irwin They have their baseline visit and then every 3 months or so we have either a phone call or a mailing questionnaire for them to complete, and every year they come for a clinic visit. If they are in the usual care program they have contact with us every 3 months. If there are in the exercise program they have weekly and then monthly contact depending on where they are in the study.
- Chu And presumably they have a diary to map out their activities.
- Irwin Exactly, they keep an exercise log every week of the activities that they have done and their heart rate so we know the intensity of their exercise for a given week every month. All of this can give us more objective information about their physical activity levels. They also annually do a treadmill test to look at how fit they are and if their fitness levels have changed with the exercise program.
- Miller It makes me wonder, for patients who are not in a study like yours which receives a lot of recognition, what would you recommend that we as oncologists do to try and help these people?
- Irwin Well currently I am working with the American Cancer Society's American College of Sports Medicine, and we are developing a certification program for personal trainers to be certified to work with those individuals diagnosed with cancer either during treatment or post treatment. It will be a nice referral system that oncologists know of these certified individuals in their state and can connect

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them with their patients. This certification program and referral process will be available at the end of 2007. This will be a great way to help those individuals, and currently finding a nutritionist to work with individuals diagnosed with cancer can help as well. To learn more about it they can either contact me or the American Cancer Society later this year.

- Chu If anyone out there listening is interested in participating in any of your trials, how can they get in touch with you and access the information?
- Irwin Probably the easiest way is to email me if you have access to email at melinda.irwin@yale.edu or they can access the website yalecancercenter.org and connect to my email or home page as well.
- Miller I want to ask you about a newer project, which we are very excited about, looking at exercise related to the cancer survivorship program.
- Irwin A lot of the research that we have been talking about is very detailed and structured and supervised. Currently at the Yale Cancer Center we have a survivorship program for individuals diagnosed with cancer once they finish their treatment. They come to a one day counseling session with a nutritionist, a physical therapist and a social worker. I am very interested in looking at if coming to this survivorship program is associated with improvements in certain behaviors, not just physical activity but also diet and favorable changes in their quality of life. If we see a favorable effect of this one afternoon survivorship program, then hopefully more cancer centers or hospitals around the country will have cancer rehabilitation programs or cancer survivorship programs available for individuals diagnosed with cancer.
- Miller That is going to be an interesting study. Our hope is that it will show an improvement, but we do not know yet.
- Irwin If we do not see an improvement it could be that that one day survivorship program was not enough, perhaps they need follow-ups with physical therapists or nutritionists either via email or a phone call once a month for the first 6 months. I am hopeful, that similar to the cardiac rehabilitation programs back in the 80's which were associated with strong improvements in individual cardiac risk, that we will see similar findings with cancer risk and prognosis.
- Miller There has not been a big emphasis in the medical world put on having our patients exercise more and eat better. Do you see that changing at all?
- Irwin It is motivated by the individuals as well as hopefully by the medical community. The medical community is motivated by research. So as long as the research is continuing to show favorable effects of lifestyle behaviors, exercise, diet, and

weight maintenance on cancer prevention and prognosis, then they will want to emphasize it to their patients.

Chu As we are finishing up tonight's show, any last minute words of advice to our listeners out there?

Irwin I would just like to say, remember that something is better than nothing. Do not overwhelm yourself and set your goals too high. Start with 5 minutes a day, then make it 5 minutes two times a day and keep it going. Also, find a buddy to exercise with.

Miller Melinda, thank you very much for joining us. This is a great topic and I want to thank you also for your wonderful research that you are doing for all of us.

Irwin Thank you.

Chu Melinda, it has been great having you on the show. We look forward to hearing more from you in the future. Until next week, this is Dr. Ed Chu and Dr. Ken Miller from the Yale Cancer Center wishing you a safe and healthy week.

If you have questions, comments or would like to subscribe to our Podcast, go to www.yalecancercenter.org where you also find past broadcast in written form. Next week on Yale Cancer Center Answers, we examine breast cancer. I am Bruce Barber.