



Exercising with Cancer, Why and How It Helps

What do I need to know about resuming exercise after surgery? Can I exercise during chemotherapy? and other burning questions get answered here by our medical experts Dr. Donald Abrams and Dr. June Chan of UCSF, award winning fitness industry leader Carol Michaels, and patient advocate Richard Davis. Learn about the effects of exercising on cancer.

Full Transcript:

Hello everyone and welcome to the Cure Panel Talk Show. I am Priya Menon, Scientific Media Editor at Cure Panel joining you from India and I welcome all of you this evening to Cure Panel's first episode on cancer and exercise. This is Cure Panel's 60th episode and today we begin our talk series on cancer and exercise, with a discussion – Exercising with cancer – Why and how it helps.

We have with us an amazing panel of experts – Dr. Donald I. Abrams is a cancer and integrative medicine specialist at the UCSF Osher Center for Integrative Medicine. Dr. Donald Abrams has been gracious with his time and is with us on cure panel once again.

Next on the panel is Dr. June Chan from UCSF. Dr. Chan has broad interest in cancer prevention and public health. Instead the killer, what individuals can do to modify their risk of chronic diseases co-morbidities and death. She has expertise and interest in epidemiology and medical education and has conducted research on diabetes, pancreatic colon and prostate cancer. Her current research is focused on understanding how diet, exercise, hormones, and genetics contribute to prostate cancer incidence, progression, and death.

We also have with us, award winning leader of the fitness industry – Carol Michaels. Carol is a health and wellness expert with more than 17 years experience and founder and creator of Recovery Fitness, an exercise program designed to help cancer patients recover from surgery and treatments.

My cohost for this show and the next panelist is prostate cancer survivor Richard Davis. Richard is a Patient Advocate at UCSF, has moderated support groups and is active in national online Prostate Cancer forums. He was also responsible for introducing the Exercise Counseling program at UCSF Cancer Center that brings exercise, the patient and their medical team together.

Welcome to the show everyone. I would like to inform our audience that Dr. Lee Jones is unable to join us today due to some sudden unforeseen circumstances. Before I begin, I would also like to tell our listeners that – If you have a question for our panel, please press 1 on your keypads and we can bring you on-air to ask your question.

You can also email your question to me on priya@trialx.com. I will now handover to Richard to begin with the panel discussion. Richard you are on air.

Richard: Hello and welcome to the panelists as well as all my friends from INSPIRE and related brotherhood and elsewhere. You may wonder why I am co-hosting, because I am not a scientist nor a personal trainer. I was diagnosed with locally advanced prostate cancer and I did over 2 years of hormone therapy that I had low testosterone in my body and I was a life long endurance athlete. What I found was that there was absolutely no exercise support at the UCSF cancer center or for that matter, anywhere else, back in 2007. I was really lucky to have some very empathetic department chiefs at UCSF, Peter Carolle and Mac Grotch as well as Chuck Rian in medical oncology and they were all out with exercise themselves and they all agreed there was a big gap. So, we established a program at UCSF, which I am hoping to extend elsewhere, that connects patients with medical team and exercise through free consults with specially qualified exercise



counsellors. And we also have a pamphlet called moving through cancer which is available to everybody through a link online. Peter Picked up the bowl with June, with June Chan. June and I talked several times about things we can get some exercise research done and Peter was interested to and they were already looking at ways to do more exercise related research and in the past 3 or 4 years some pretty interesting studies have come out which June will tell you about. So, if you would like any more information on exercise and cancer after the show you can take a look at the research tab www.medifit.org that is on the invitation. There are lot of excellent questions we will cover a lot of topics and I am going to kick up with each panelist with a sort of basic question and hopefully we will have a lot of time leftover to cover the questions that have been sent in and the questions that we are gonna get right now. So June hello again. And you and I have been working on this exercise and cancer issue now for maybe 5 years and I have seen you make a huge amount of progress. It is really rewarding. I want to start off by asking you about the study you presented at the 2012 ASCO conference that suggested vigorous exercise may slow the progression of prostate cancer. How and why you think this happens in layman's terms, does exercise change the pathology of the cells of the immune system and where has this led in your current research. And I would also like you to address whether it is appropriate to other types of cancer.

June: Great! Hi everybody. Thank you very much Priya and Rick for having me on the show and the opportunity to share a little bit about the research. To answer your questions specifically about that 2012 study, I am gonna take a step back and really what let's about our findings in 2011, where we published 2 reports looking at 2 large population with localized prostate cancer and in each study we observed a generally consistent finding that self reported exercise behavior could potentially be related to benefit with regards to both biochemical recurrence amongst men with prostate cancer as well as prostate cancer death. From these studies one had about 1500 men, one had about 2700 men – you know we saw benefits around 50-60% reduction of the risk of prostate cancer recurrence or prostate cancer specific death, based on self reported exercise activity after diagnosis. And what we saw was that really a team to be....they will have to do something, they got their heart rate up. So, we really saw the benefit either for what we would call vigorous physical activity – so that would be like running jogging swimming, calisthenics or for a self reported brisk walking pace. So that was a walking pace of about a 20 minute mile or faster. But we did not see it for overall physical exercise or physical activity, which is very intriguing to us. Because if you are looking at general cardiovascular benefit or all cause mortality, you would see a benefit much sooner, just for any type of physical activity. So, in the study that you are referencing with, we really wanted to know what is special about cardiopulmonary exercise or special about vigorous exercise, and we had the opportunity to do really more than exploratory study, taking advantage of some existing bio-specimen that has been collected as part of the previous clinical trial, and we looked again at specially vigorous physical activity and some bio-marker patterns that we could assess in the prostate glands or the normal parts of the prostate glands from as you did have early stage cancer. And so this shed a little bit of light on potential pathways that could be beneficial. We saw increased activity in DNA repair pathways, inflammatory pathways, oxidative stress pathways and cell cycling. All this has also been linked to cancer mechanism. So, those are some of the molecular pathways that we are starting to investigate further and confirm in future studies.

Richard: Do you think from the research that you have done and knowing the work of your peers that what you have discovered in prostate cancer has some application to other cancers. And I know that some of the work by Melinda Rowin, which preceded yours has very very similar overall survival end points as your study.

June: Absolutely. So, actually just to give people background, the bulk of the evidences really comes out of the breast cancer literature. I would say at least so there is, say, you know, 4 dozen studies today are focused on exercise in cancer survivors, probably at a least half of those are more done in women with breast cancer. And those data are largely similar into our finding we have seen on prostate. They suggest a similar benefit anywhere to a 20-60% reduction in recurrence or other clinically relevant outcomes. And then, this is an area where we need to do a lot more research, the benefits, seem to be seen from quite a bit of wide range of activity and some cases studies suggested that they saw benefit even if you are participating in 30 minutes a day, whereas others suggested more intense levels of activity undertaken to see a benefit. So we are still. we still need to do a more reasearch in this area, but you are correct that these findings in



prostate certainly has been also observed in breast cancer and in colon cancer to date.

Richard: So it sounds like the bottom line is we are not quite sure how much exercise everyday, because there are different variations, but it is very, it is highly advisable to do some exercise everyday and in the course of that exercise to get your heart rate up.

June: I would agree. Definitely it is beneficial we get some exercise everyday and we would say that in general in public health for anybody. But I think the message for people living with cancer is you know, sometimes, you have the concern about the safety if its safe to exercise. Traditionally, a lot of people think we are getting more frail and they pull back. Certainly from our observational data studies today and even from clinical trial data, you know, exercise with, you know, some guidance, if it were you to exercise that is all was recommended. So, exercise with some guidance can definitely be undertaken safely, certainly will impart benefit for all cause mortality and now we are seeing some consistent emerging data for cancer specific outcomes.

Richard: That is really great. I seem to recall that some of these studies have shown as much as a 60% reduction in or improvement in overall survival, for certain cancers.

June: that is true, that these are just to clarify for folks. These numbers such as a 60% reduction in overall survival has been seen in observational studies from breast, colorectal cancer patients and prostate cancer patients. We have yet though to complete a focused randomized clinical trials you know where you are actually testing the experimental settings in the benefits of exercise on cancer survival. So that still needs to be done, and we are definitely working on those types of studies in prostate cancer and breast cancer but it takes a lot of money and it takes a long time. There is one clinical trial being undertaken now specifically in colo-rectal cancer survivors, with the survival outcome but it is still in the phase of enrollment.

Richard: And if I recall when we last spoke, it is very hard to raise money through the NIH and other folks like that because they still don't, they don't recognize the benefit of exercise.

June: I don't know if it seriously that they don't recognize the benefit of exercise, but we could certainly use more support from whatever institutions' you know, are interested in this. As a matter of fact that should be NCI. One of the challenges is time to study, you know. Fortunately cancer survivors these days are living longer, and to do undertake a study that really wants to look at survival is very long undertaking in many situations and contexts, so that becomes challenging. But the NCI actually has a current call out right now focused on exercise or weight control programs or interventions in cancer survivors looking at biomarker outcomes. So, in recognition that it might be very difficult to look at survival outcomes, as they are expensive, takes a long time and a lot of people. They are actually; you know supporting research right now to look at biomarkers. For example we have an new clinical trial that we are gonna open at UCSF and Memorial Sloan Kettering Cancer center. It is a dual side trial focused on men with early stage prostate cancer pursuing active surveillance and we are specifically looking at supervised exercise vs. usual care and prostate tumor biology changes as well as other host and systemic factors. So, it is way to, in a study design approach to sort of address the challenge of really how to do an efficient study in a reasonable amount of time and get answers to the patients, who are are millions of patients living with cancer right now.

Richard: June, this is all such great information and I am so pleased we had the opportunity to put it out to all the folks and others that will listen to this in the future. I have got loads of good questions for you and I will come back to you. But I want to welcome Dr. Donald Abrams who I know for a fact, although I have never seen him as being a real angel to many many cancer patients including good friends of mine. Welcome Dr. Abrams. I would like to ask you whether in your opinion some cancers respond better to exercise than others, or should everyone diagnosed with cancer, exercise, provided that they are able to do so or medically approved to do so.

Dr Abrams: It is a good question. I agree with June as most of the evidence today is really is around the cancers that are related to hormone production- breast and prostate, because exercise probably reduces



estrogen and androgen and then the special case of colo-rectal cancer also being one that appears to be quite responsive. I agree that the American Institute for Cancer Research where all cancer research fund guidelines for reducing the risk of cancer are 10 overall, number 9 or number 10 being for cancer survivors follow the nine guidelines above. And their number 1 guideline is to be as lean as possible without being underweight and the number 2 guideline says, be physically active for 30 minutes each day. And then the subsequent guidelines talk about nutrition. So, clearly, the AICR put physical activity right up there as way to maintain a good BMI. The American Cancer Society also recommends at least a 150 minutes per week of moderate intensity exercise or greater than 75 minutes per week of vigorous exercise as a way to reduce the risk of cancer. In the patient's IC at the Osher center during my integrative oncology consultation, we spend most of the hour talking about lifestyle modification. I am a big fan of nutrition and nutritional intervention in patients with cancer and make the same recommendation for organic plant based antioxidant rich anti-inflammatory whole foods diet for most of the patients I see because, what I say is that cancer is like a weed and other people are taking care of the weed and it is my job to work with the garden and make the soil as inhospitable as possible to growth and spread of the weed, and hence suggest that fertilizer, organic plant based etc. I also then focus on physical activity and I believe that the best intervention is the combination of both aerobic activity to increase heart rate and oxygenation as well as resistance activity which helps with muscle tone and bone integrity. So many of the patients I see have the bone as a obvious site of metastasis and to keep bone strong I think is critical. So, yes, again as June said, I believe that breast colon and prostate are the ones where the evidence has been most clear, but there is increasing evidence in pancreatic cancer. You know, lung cancer patients I think benefit. Physical activity I think should be part of the whole spectrum of survivor-ship. I know my friend Keith Block who has an integrative oncology center in Evanston, IL, has patients receiving chemotherapy while they are tread-milling. because that is how much he believes in the importance of physical activity during cancer treatment.

Richard: I have got two buddies going through chemo, right now. I will mention it to them. But I will say to you that, in the midst of a chemo, they are off to the gym, they are using the treadmill, they are getting on the exercise bike on daily basis and actually three friends, two with prostate cancer and one with lung cancer and they all tell me that they feel the exercise makes a difference. Notwithstanding they feel so fatigued from the chemo that introducing the exercise makes them feel better when they have completed it.

Dr. Abrams: Well, exercise as we know releases endorphins which is the body's own endogenous opiate. So, they do, I believe, they probably induce endo-cannabinoids as well and all of these things do help you feel better, improve your quality of life and probably help you sleep better. In addition to aerobic and resistance, I do want to put in a plug for Yoga, as somebody who took up Yoga late in life, only once I turned 60. I definitely wish I had started it much earlier, because Yoga is not only strength aerobic, but it is also balance and flexibility and it gives you that mind body components, because you are concentrating on your breath which is something that we can control either autonomically without thinking about it or by thinking about it.[00:19:44] And by having your breath in your movements be intertwined, it is definitely very valuable mind body intervention as well as a physical activity which has been shown in a number of different clinical trials to have benefits in many diseases. Again frequently for women with breast cancer, because they tend to be a group because of their long survival and their adequate number that can be studied most intensely.

Richard: One more question before we move on to Carol, Inflammation is often hypothesised to aggravate cancer. So, is this consistent with exercise or are we talking about different types of inflammation?

Dr. Abrams: So, I am very happy to say that I found an article in the ASCO post which is the American Society of Clinical Oncology's news paper from May 15th written by Kathleen Wessa, and Barry Caseleith at Memorial Sloan Kettering, on the benefits of exercise in cancer patients and in answer to your questions, increase in physical activity decreases systemic inflammatory responses by way of decreased tumor necrosis factor alpha, interleukin 6 and C reactive protein synthesis. Multiple...ya so there you go. So, I will say that we are concerned that Marathon runners and people that are excessive in their physical activity may actually have increased inflammatory markers.

Richard: Ok. Well I will be emailing you after the show for that link and I will put it on the mid of the website



so people can access it.

Dr. Abrams: Very wonderful!

Richard: I mean I actually exercised everyday during my , I was on Lupron for 27 months and radiation at the beginning of Seeds and other than the day that I, the day after I got my Seeds, I exercise everyday and on the days I felt really crummy I would just go out for a 30 minute walk. So, my exercise choice is rolling so, it really really help me. Carol, Hello again. I haven't spoken to you for a while, but I got your number on my roller decks and I know when I needed someone, you are the one.

Carol: I am so glad thank you.

Richard: My pleasure. Tell us what type of cancer your clients have and what different stages and what do you think of the most common side effects from cancer treatment, all types of treatment, surgery, radiation, chemo hormone therapy that can be helped and alleviated through exercise?

Carol: Well, my clients have all types of cancer. The majority that I work with have breast cancer. The people that I see are in all stages of treatment and now it is recommended to exercise during chemotherapy. So, we are seeing people during treatments. Really what I try to focus on is to help them deal with the side effects that are caused by the surgery and treatment. So the first side effect that I usually deal with is loss of range of motion. And due to surgery and during treatment specially for breast cancer, some of the other cancers as well, uterine and ovarian – cause a lot of tightness and poor posture in a forward lean type of posture. So, first thing I deal with is just getting the range of motion back with a variety of rehabilitative stretching exercises. Once I see that their range of motion is just about where it should be, which is about 80-90% of range of motion, I chose to also add strength training. I find that the exercise program does help them with fatigue. They usually come in feeling exhausted and they push themselves to attend and afterwards they just so glad they did it. It really is very helpful. With fatigue, you know, I have seen a lot of improvement in joint pain, and I believe there was a study that show that exercising specially in breast cancer survivors, while on Remedex to help with joint pain. So, I am seeing improvement in Joint pain and I do focus a lot on strength training, because osteoporosis is such a common side effect of people who are on hormonal treatment. So, strength training is a part of every exercise session.

Richard: You raise such a good point with the osteoporosis, because I was a among the marathoners of the year and when I went on the loop run, I discovered I was osteoporotic. I mean you could have not mere??? with the feather ???, and so I got Zometa on a fairly, once a year and I did exercise, did a lot of weight training and I improved my density in my spine from -2.5 to -1.5 three years later when I finished. And that was just through daily exercise, not daily. Three times a week I was doing weights and the Zometa. And I would tell you I think I was stronger then than I am now. So, you guys out there on hormone therapy or about to go on hormone therapy, I just want to encourage you don't be afraid of the weights, start with light weights and do it out. It can make a tremendous difference. You can retain your muscle mass and you can certainly build your bone density. I want to ask you Carole and maybe, I am gonna start with some of the questions cause I want to have a lot of time for questions, and anybody who has a question online right now should start calling in or emailing. Priya's email is Priya@trialx.com.

But I am gonna ask you a question Carol and then may be Dr. Abrams will follow up of to it. You mentioned that exercise can help fatigue. One of the questions that came in is the following – Cancer treatments themselves may have a huge impact on the well being of the patient – like chemotherapy and radiation therapy cause a lot of nausea, vomiting, GI upsets which can make the patient lethargic. Do you think exercise helps to reduce such cancer induce fatigue symptoms? And we talked about fatigue, so let's focus on some of the other things, particularly people who are going through chemo right now, maybe had radiation had surgery, How does exercise help those folks?

Carol: Well, one thing I just want to mention for the people that I work with that are right in my small group extra type classes. The big improvement that I see is emotional improvement, because there, the exercise



groups become support groups as well and you know I think, when someone feels better emotionally just by attending, even when they going through such serious chemotherapy treatments, they just seem to have better spirit and emotional improvement, which makes slow their things like aches and pains, things decrease due to just feeling happy or in a better mood.

Richard: Yeah! I mean I certainly know that I have used exercise to help me with depression for the last 30 or 40 years. And I always tell folks that they can do well. Dr. Abrams how do you feel that exercise can help the patient beyond mood and fatigue. Are there any other areas where you think it improve the quality of life.

Dr. Abrams: Well, I was just gonna say quality of life, because that is all encompassing patient reported outcome if you will. Just that they whatever, different people have different measurements, but we haven't talked about overweight. I believe we have an epidemic of obesity in the united states that is contributing to the development of a number of chronic diseases including cancer. And certainly if people initiate physical activity program who previously have been more sedentary, they are likely going to be able to loose some weight. And much of that weight we know makes hormones which drive hormonally responsive tumors. So loosening weight is not necessarily, well, it is a patient reported outcome measure but it is also quite objective as opposed to subjective. [00:29:46] But I think yes, mood, energy, quality of life, depression, and you know again as we mentioned in the study in stage III cancer patients, those patients who exercise the equivalent of 60 minutes a day, five or six days a week, actually have significantly improved outcome compared to the patients who did not.

Richard: I am gonna ask one more question from my list before I go to Priya, because I know she has got at least one person on the line and this one is to Donald and Carol and June. You may all have input here. How long should an exercise intervention should last to to be effective in cancer patients?

June: Richard can I clarify, what do you mean by how long? How much you spend in one session? You should exercise forever.

Richard: Yes, I mean people say, how long do I have to do this for, and hopefully they find out that they can't live without it. That is what we hope.

Carol: You hit the nail on the head with that question because people go to physical therapy their insurance pay for a certain amount and then most of them are not where they need to be. So, that is where the cancer exercise specialist comes in and you know I found that people have very specific issues – balance issues due to chemotherapy, sarcopenia- things that really need to be addressed through exercise and clearly side effects last for a year to two. You know as everyone said, you need to participate forever in an exercise program.

June would you like to add anything.

June: Sure. Similar to what has been said. In general, people regardless of whether you have cancer, the recommendation should be to keep physically active as long as they can, as much as they can. For people living with cancer, I think may be it is difficult to hear that message if you are not feeling well and it is adding on, it is a huge lifestyle change, maybe the messaging really should be – You know – even as little as 10 or 15 minute walk a day. Start wherever you are at and try will have a benefit, that has been shown through large population studies to have a benefit for death outcome. If you are even walking for 15 minutes a day at a normal pace. For a cancer specific benefit, the data are suggesting that if you really want to prevent a cancer death, cancer recurrence, more intense or vigorous activity maybe needed. But people are probably, for general people its just to prevent death. That is good start. So, I think there are different messages, but start where you are at. You can do a 10 minute walk to start with and slowly get up to 30 minutes and then maybe a little bit of swimming and other things, hopefully that will catch on. I did want to mention on one of your earlier question about specific side effects. There are also clinical trials and short term trial data that suggest that some supervised and specific type of exercise programs exist for alleviating the side effects of incontinence that have been created with prostate cancer. The data is limited but specifically there is some



guided regimen called pelvic floor exercises that have been found to help with rehabilitation. I mean, I believe Dr. Jones he is not here, but he would also talk about the benefits of specific programs to relieve their lymphedema post breast surgery. So there are those benefits as well.

Richard: Not only, I am to know with prostate cancer, that only incontinence afterwards, but the study at Washington university in St. Louis a few years back which suggested that the better shape you are in going in, the less likely you are gonna have problems with incontinence coming out after surgery. So, that is another good study. Priya, let me go over to you, and I guess you have a question online.

Priya: Thank you Richard, yes we have a person with a question. Matt you are unmuted, please ask your question.

Matt: Thanks Priya. Good afternoon everybody. I am a multiple myeloma patient and myeloma patients are dealing with bone damage with a potential with bone damage, but we are told to do weight bearing exercise. I guess this is for the doctor or everybody, how do we know what is OK to do and what is too much in terms of our bones in protecting them, yet strengthening them.

Dr. Abrams: This is a situation I would refer to the personal trainer at the UCSF who is trained in safety in these sorts of situations and defer to that persons judgement on that. I agree that patients with bone metastasis, I might not want them, you know doing yoga inversions etc. So, I think a trained professional would be a good thing to include in this discussion.

Richard: So, Carol, looks like you just got passed the ball.

Carol: Yes. You know you would just really be conservative and start with very very light weights and very very slowly progress and it is very frustrating for cancer patients because you might have been lifting 20, 50 or 100 pounds prior to the diagnosis, but it is really trial and error at this point to see, you know what you can handle safely. It is better to just start with a light weight and just gradually progress. It really is trial and error type of thing with this situation. And common sense to look to your body.

Richard: You know, we are very lucky at UCSF as Dr. Abrams mentioned we have 2-3 specialized cancer trainers on board, but Carol – What could people do or what should they be looking for if they don't have that. How do they find a trainer that is specialized in working with people with cancer. You may just want to mention the, you may want to mention the ACSM special certification that you have. So, can we help people identify trainers?

Carol: Yes. You can go to the ACSM website where they have a listing of everyone who has the credential of cancer exercise trainer. So that would be a good start, but even at that, there are still not a lot of people credential with that extra certification. Some of the physical therapist, I did believe, at this point are now specializing in oncology physical therapy. So that would be another route to go. There are special books and DVD's which could give you guidance as well. But that is one thing that I would love to see, we definitely need more fitness professionals who have experience and credential for this field.

Richard: Yeah, anybody on the line that thinks that there is an institution that would like to institute a program like we have at USCF, please let me know and we will start working with them. We don't have any other questions lined up right now from listeners, so if you got a question out there, please call it in or send it in to Priya. In the mean time I am gonna come back to some of the questions that was submitted beforehand. I think this is a good question and probably concerns a number of people online. Are there any benefits of exercise training in cancer cachexia – where patient is already losing a lot of muscle proteins everyday and grows frailer everyday, losing weight, how should they and what should they be looking at in terms of considering exercise? Dr. Abrams I will have you start off with that one and maybe Carol can come in and tell us how she works with people that are losing weight.

Dr. Abrams: Yeah. I would have to have Greta over at the cancer center, even though I feel I like know quite



a bit about nutrition in cancer when it gets to actually protein and muscle and you know if somebody is suffering from cancer Cachexia – its all about energy in and energy out, so I would not want them to expend more energy than they are taking in, because that might exacerbate this protein and muscle mass log issue. So, I would really ask my cancer nutritionist to make sure patient is ingesting protein and adequate calories before I have them, if they are truly cachectic, participate in too vigorous a resistance exercise program. You don't want to make it worse.

Richard: No, obviously. Carol what do you do when you got people coming in who won't do exercise, feel like they need to exercise, but they are losing weight. How do you work with them.

Carol: Well, fortunately you know there have not been too many in my 17 -18 years of working with cancer patients. The few that have been in that situation, you know just kind of modify to a lot of relaxation, breathing. We do a lot of pilates, which I really wanted to talk about which is another wonderful type of exercise in addition to yoga that was mentioned earlier. And I like pilates exercises in particular, because of the deep breathing that goes along with it. So, you get a good relaxation effect. Also for those that have or at risk for lymphedema, when you are deep breathing and there is the pressure of the belly button going towards the spine. During these exercises if the center is the lymph center, hopefully that might be moving some of the lymph fluid around. So, you know we find that the pilates and relaxation breathing type of exercises are very gentle and with that type of copulation also with the group exercise, where they just enjoy being with their friends and the camaraderie of the group is very uplifting.

Richard: Yeah! I mean I remember probably 6-7 years ago, women who suffered from lymphedema after breast cancer were not encouraged to used light weights, but now that has changed completely and there are a couple of studies that suggested that actually it might be a good thing. Donald you want to say something about that.

Dr. Abrams: No, I think you are absolutely correct. That is a situation where things have changed and you know, I know we are also doing studies looking at the yoga in women with Lymphedema. Its true the things have changed.

Carol: I was just gonna say I was so thrilled that when the study came out saying it was safe for women to use weights, importantly when it is crucial, because of the bone trimming osteoporosis issue. You know that is one of the way to address osteoporosis, and would be very sad if women who are on hormonal therapy could not strength train. So that was really great news and you know we find in over the years we have doing this, we have never seen one flare up of lymphedema.

Richard: Wow! Well, that is great. Anybody out there who would like to ask a question I believe what you have to do is press 1 on your dial pad and you will be able to talk to Priya. Now we have a question that has been sent in and I am gonna read it. It says – Dr. Abrams mentioned a study which showed physical activity was beneficial for inflammation and cancer aggravation. That is the study I am going to get the lead forum post later. What was the intensity that this exercise was done at and how was this measured? Heart rate and other?

Dr. Abrams: What I read was just a paragraph that said increased physical activity decreases systemic inflammatory response by way of those mechanism decreasing tumor necrosis factor etc. There was no, you know in that citation, it says nothing you know, to answer the question that was asked. But, I did want to make a point. I sent that to Priya already, I do want to make a point though about research and I don't want to sound anti-intellectual because I am a clinical investigator. But I also believe that the degree of evidence should be directly proportional to the potential for the intervention to do harm. This is something that my Andrew Wild, one of my teachers has taught me. If I tell patients I am gonna give you this new chemotherapy that is gonna make your hair fall out, you are gonna be nauseated for three days and it is gonna suppress your bone marrow, then you are gonna ask me to show you a lot of evidence. But if I am gonna say why don't you take a 30 min walk 5 days a week, you know what is the potential to do a harm there.



And rather than randomize, because what is the placebo of a 30 min walk, you know, I don't think we are really ever gonna get that great evidence. You know, it is hard to do a placebo and so, you know why don't we just use our common sense and know that, you know this is the guideline from the American institute for cancer research in the American cancer society for reducing the risk of cancer. And I would say, if something is good for reducing the risk of cancer, then, as they say for cancer survivors follow the 9 guidelines above, then let us do it also in patients with cancer and let us not wait for randomized controlled trials necessarily to demonstrate the benefit when it seems fairly obvious that it is of benefit.

Richard: I am got a more technical question here for June and possibly for Donald. There is increased endogenous glucose production in cancer patients, I guess that seems to mean cancer patients produce more glucose. How do cancer cells respond differently than normal cells in terms of glucose metabolism while exercising? And we also know glucose, sugar may not be good in the cancer world. How does this change with exercise induced glucose production. June do you want to kick that one off.

June: Sure. I can take it a stab at that. I think question is actually pulling together of data that has been reported from different types of studies. What is generally understood at this age is, you know several studies have reported that having higher circulating insulin levels has been associated with cancer outcome that has been recorded for prostate cancer or precursors of insulin or markers of insulin levels has been associated. And similarly circulating levels of component what we call Insulin like growth factor axis has been linked to various types of cancer or the development of those cancers in particular. And what we also know is that exercise modulate those factors in the body. So you can reduce your insulin levels, some studies have shown that you potentially can reduce the IGF factors – IGF1 in particular through exercise. So that is connecting the dots here that again one of the mechanism at which exercise may be imparting a benefit is the systemic effect on improving or influencing your insulin or insulin like growth factor metabolism. So, that is certainly an area of increasing research. We are doing studies, we are also looking at components, active components of insulin or insulin like growth factors in the organ site itself, not just systemically, but looking in the breast tissue, and the prostate tissue. So, we still have a lot to learn here. So lot more research is needed to really nail down the biology, but the dots that are connected are associations between exercise and a benefit on insulin metabolism and the IGF pathways and then linking those, that the observation of those factors have been linked to cancer outcomes.

Richard: Dr. Abrams.

Dr. Abrams: I definitely agree with June and the article that I have mentioned the number of times – Kathleen Wessa says that multiple mechanisms enhance insulin sensitivity, decrease insulin secretion, decrease insulin C peptide and decrease interleukin 17 levels – all of this making the body more insulin responsive at lowering glucose. And also decreasing the overall inflammatory response. So, Yes, another mechanism by which exercise helps in cancer patients and in people without cancer to help prevent cancer, is beneficial, is through this-insulin, insulin like growth factor, insulin sensitivity pathway and network.

June: Several therapists are reporting on the potential mechanisms, not just the ones that Donald has been referring to. And the consistent pathways that seem to pop out, do seem to be insulin check and information. Potentially also the, any of pathways that you mentioned are not just also team but also in particular I also think has been more reproducible. Cytokine and oxidative stress pathways as well.

Richard: So, again, lets switch and go back to something more practical, practical in the sense of how patients can use them on day to day basis. What are some of the risks that a cancer patient should keep in mind while exercising, and what are some ways to cut down on those risks?

Carol: Well before they start an exercise program of course they need to get clearance from their health professional because some of the treatments can cause cardiac issues, another issues that you really do need to make sure that you have a full medical checkup and clearance before exercise. You know you could be anemic. A lot of people that I have been working with have had neuropathy that seems to be a very common side effect. And then in my experience exercise, its just an observation, has been helping the



people I have been working with, with neuropathy and most importantly we do screening for balance because when there is neuropathy in the foot, obviously balance is effected and we just try to keep all the surrounding muscles as strong as possible. So, help them prevent falls, which really is one of the goals of my exercise program.

Richard: What sort of exercises do you really incorporate to address neuropathy Carol?

Carol: Well, we try to ensure that they get an aerobic component almost on a daily basis. And I usually recommend a recumbent bike just because of the risk of having a balance issue and falling. So recumbent bike is very safe and lot of people I work with have access to it. And then in addition to aerobic various strength training exercises, from standing or prone or supine position, various leg lifts with weights added to it and some other basic traditional strength training exercises would be appropriate for neuropathy. But it is really been very common issue and they are very frustrating for the patient.

Dr. Abrams: Yeah. I would just like to echo that- That you know, when I give my exercise recommendations, when I write my note, under my physical activity, I often have to say "limited by neuropathy". It is really frustrating when patients have this chemotherapy induced neuropathy, where more and more were curing patients of their cancer and they are disabled by their neuropathy. It is very distressing.

Richard: I mean what it does sound like to me with neuropathy is that if you can improve your circulation you are gonna address the neuropathy. I mean is that an oversimplification.

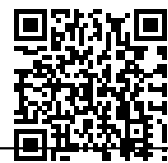
Dr. Abrams: Yes I think so. Its not circulation. It is the nerves – nerve damage, not the vessels. So nope.

Richard: Ok. Umm I am going to throw in, we have still got 3-4 minutes and I have got a couple more questions here. I am gonna throw in one for the prostate cancer guys. I would like you Dr. Abrams, and possibly Carol and June, June may have some input on this one. How does exercise impacts and helps the side effects for men who are on androgen deprivation therapies, which may be a little different to the breast cancer anti-androgens? It may include LH, RH drugs which stop the production of testosterone altogether and estrogen.

Dr. Abrams: Well. Testosterone is really important for building muscle mass and decreasing fat and when you don't have it, you know, my patients get a body habit not they are used to and not that they desire. They can do a lot a lot of, I differ to Carol on this, but they can do a lot of resistance work and may be won't build the muscle that they want to. I mean I am 64 year old man who goes to the gym and has a personal trainer and I notice that my muscle mass isn't what it used to be. So I think in the absence of levels of testosterone that we have when we are 30 or 40 sometimes a little bit more difficult to build that body mass. On the other hand aerobic activity that increases circulation may help with male vitality, if you know what I mean. There is some evidence that men who are more physically active have less erectile dysfunction.

Richard: And as we have said we know exercise can help with incontinence issues, build strength. And one of the big issues that we touched on several times is mood. And testosterone affects the brain chemistry and so many men come to women therapy having never experienced depression, and it just hits them like a hammer. And one way to alleviate that black cloud is by exercising because that helps to regulate the endorphins and other brain chemicals that have been taken away by the lack of testosterone. So, yeah, by the way I am in your camp. I also noticed, every time I get on that urg and I can't see the numbers like I used to see the numbers, so I understand. June can you talk a little bit about the CHALLENGE study in Canada and what it is doing? Somebody wrote in to ask about it and I believe it is a widespread study for cancer patients.

June: Sure, I can tell you a little bit about it. This is a study that targeted to enroll patients, I believe high risk colorectal cancer patients. This study is open in Australia and in Canada. And their goal is to enroll nearly 1000 patients. They have been recruiting since 2009 and have recruited only about 300 patients to date. So I encourage folks who are interested in this to check it out on their websites. I think we can post that on this



website a little bit later. Again if you are in Canada or Australia, I hope we have broad listing audiences, the study could use more participants to meet the goal. Their goal is to look at survival. So does a supervised exercise, actually not supervised exercise – But does an exercise intervention, they are targeting increasing to a 150 minutes per week or, increasing by 150 minutes per week vs. usual care – Does that improve survival in patients with colorectal cancer. So, it is a canadian- australian collaborative clinical trial.

Richard: So this is solely for colorectal patients?

June: Yes, this is targeted at patients with colorectal cancer, yes. So, post treatment – treat patients treated with surgery and chemotherapy. So they want high risk colon cancer survivors. Actually colon cancer not colorectal. We can post this information. There is a toll free number for people who are interested.

Richard: Ok. We will try and get that to Priya and some or other will pass it along. I want to thank you all three of you. This has been terrific, and you have passed so much great information on to the audience out there. I am gonna hand it back to Priya to close out, because we are almost at the end of the hour.

Priya: Thank you Richard. I think you did an absolutely wonderful job. It was great co-hosting with you. Dr. Abrams, Dr. Chan and Carol thank you so much for being with us today. taking time out and helping us. Thank you very much. Dear Listeners, This was our first episode on cancer and exercise and hopefully you have picked up lots of tips from our experts. Please let us know your feedback and also what you would like to hear discussed on the talk series going forward. The link of today's show will be shared with all the participants. Please join us today on 26th June on 5PM ET where we will be discussing prostate cancer and clinical trials with Dr. Ian Thompson from The University of Texas Health Science center. Please visit curepanel.carefeed.net for details of our upcoming shows or you can always mail me priya@trialx.com. Thank you so very much. Bye