

## **“Exercise to Boost Your Immune System to Fight Cancer” (Dr. Tom Incledon)**

**[#49]**

Brad Power

March 22, 2023

*“You're going about the exercise portion in the context of everything else that's going on.” – Dr. Tom Incledon*

*“When I look at all the different drugs and supplements and strategies that have been tried, I've not found anything that comes even close to stimulating the increases in natural killer cells and cytotoxic T lymphocytes [as exercise with oxygen therapy].” – Dr. Tom Incledon*

### **Meeting Summary**

In their search for therapies that can fight their advanced cancer, patients and caregivers are moving beyond the standard of care of surgery, radiation, chemotherapy, and immunotherapy to explore "Food as Medicine" and "Exercise as Medicine." Exercise can offset the effects of hormone deprivation therapies on weight, strengthen the heart, increase bone strength, and raise resilience.

But is there scientific evidence that can measure the impact of exercise, and point to some exercise therapies that are better than others?

Since 1989, Thomas Incledon, PhD, RD, known to most as “Dr. Tom”, has been recognized as one of the world’s leading experts in human health and athletic performance. He is the founder and CEO of Causenta Wellness, a cutting-edge wellness and cancer treatment center in Scottsdale, Arizona. He holds a B.S. in Exercise Science, B.S. in Nutrition, M.S. in Kinesiology, and Ph.D. in Exercise Physiology. “The World’s Strongest Sports Scientist,” Dr. Tom has competed at the World Championship level and set national records in Strongman Competitions.

Dr. Tom sets the stage for any exercise program to make sure that it is personalized to the individual. A patient should get a battery of tests that a patient before starting an exercise program. His research has uncovered an approach that is very beneficial for cancer patients: exercise with oxygen therapy, which improves the immune system to fight cancer and simultaneously makes patients significantly stronger.

### ***What are the benefits of exercise?***

Any exercise is beneficial. It reduces the cancer burden in the body. More exercise in all forms is always good.

Exercise strengthens the immune system (increases cytotoxic T lymphocytes and NK cells) in healthy people and people with cancer.

You can simultaneously improve your brain, heart, lung, and muscle function.

You can enhance recovery and reduce inflammation markers faster.

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Some drugs that you may be taking, such as chemotherapy, will reduce the immune response to exercise.

### ***What testing is needed to set the context for an exercise program?***

Testing must be done to set the stage for an exercise regimen so that you have a game plan, rather than just doing some exercises.

Before you start an exercise program you should test, analyze, and understand your:

- **Genome:** Understanding the DNA and RNA mutations in your tumor tissue and blood is a good start, but they are not a guarantee that's what's driving the cancer.
- **Proteome:** Proteomics (analysis of the proteins in your tumor) are going to add to your understanding of your cancer.
- **Environmental chemicals:** Can disrupt your endocrine function and prevent chemotherapy and immunotherapy from working.
- **Microbiome**
- **Micronutrients:** You should understand a wide range of vitamins and minerals, essential amino acids, essential fatty acids, and other antioxidants that impact immune system (lymphocyte) responses.

Dr. Tom works primarily with Tempus Labs (for somatic mutation testing) and mProbe (for proteomic testing) and other labs for additional testing services.

### ***What are other principles in designing an exercise program?***

Your exercises should address what is limiting you. For example, if you have trouble getting up and have weakness in your left leg, you should work on strengthening your left leg. If you are at a low level of fitness, e.g., you can't stand, or can't walk, and results are needed fairly quickly for survival, then you should take an aggressive approach to exercise, including supplementing with oxygen. If you are at higher levels of fitness, then high intensity interval training is very effective.

You should plan to progress in your fitness to get a stronger immune response. You should set goals to do more work and have less rest in the same amount of time. For example, if you're burning 10 calories a minute, then go to 11, 12, and 13. You should set a minimum goal to do 1000 calories in a workout. At that level of exercise you won't have any brain, heart, or lung risks. If you are doing sprints or intervals, you should measure your response and recovery, looking at your heart rate and blood pressure afterwards. For example, if it's taking you four minutes to recover, then the exercise stimulus was too much at your current level.

Increasing or lowering oxygen concentration can enhance the desired effects of your exercise. For example, to enhance brain, heart, lung, and immune system function, you should add oxygen to your exercise. To add muscle faster, you should reduce oxygen.

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### ***How does taking oxygen during exercise increase the impact of exercise on your immune system?***

- Exercising with oxygen allows you to do up to 25% more work. This extra work increases your epinephrine, which stimulates your immune system cells (cytotoxic T lymphocytes and NK cells).
- Exercise with oxygen appears to eliminate pathogens in the blood.

### ***How do you increase or reduce oxygen during exercise?***

For increasing oxygen, you wear a mask and breathe through a hose while you are exercising. The hose is connected to a bag which is connected to an oxygen concentrator, which takes room air and concentrates the oxygen.

For reducing oxygen, there are tools that restrict blood flow to the working muscle. You can get velcro cinch straps from Amazon for about \$16 to \$20. They are small enough to fit around your arm or the top of your thigh. You pull it tight, and then put the velcro attachment on, and it holds the occlusion over, for example, a blood vessel in the upper arm.

### ***How can you access oxygen therapy?***

You don't have to go to Arizona. You fill out a form on a website. Once you have your lab results, you have an initial consultation. There is no charge for the first consultation. Most people do it by Zoom. It's 30 minutes long. You go over your case, and they point you in the right direction. Beyond the initial consultation, additional consulting is \$360 an hour, which provides recommendations, such as additional tests. An exercise with oxygen therapy session is \$150. Some people buy packages of 12 for \$1500.

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### **Meeting Notes**

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### **Discussion Outline**

1. Introduction to exercise for prostate cancer. (0:03)
2. How do you know if you're on the right track? (4:32)
3. Environmental chemicals and the microbiome. (9:54)
4. Oxygen concentrator and exercise. (15:37)
5. Bacteria in the blood. (21:05)
6. How many sessions of exercise did this patient have? (25:54)
7. Exercises and immune function. (31:41)
8. Questions and answers about access to treatment. (36:25)
9. Is exercise like a placebo for cancer? (42:03)
10. Exercise's long-term benefits. (46:22)
11. What is the cost of treatment? (50:47)
12. What is the cost of an EWOT session? (55:18)
13. Oxygen concentrators and oxygen consumption. (1:00:30)
14. Work-to-rest ratio. (1:05:43)
15. PSA and prostate cancer treatment. (1:10:35)
16. Treatment recommendations for patients with stage IV. (1:15:57)

### **SUMMARY KEYWORDS**

exercise, people, testing, cancer, microbiome, organisms, minutes, data, patients, lab, bacteria, psa, supplemental oxygen, oxygen, increase, blood, therapies, immune responses, question, strategies

### **SPEAKERS**

"Dr. Tom" Incledon (81%), Brad Power (5%), Brian McCloskey (4%), Jim Ward (3%), Rick Stanton (2%), Saed Sayad (2%), Russ Holyer (2%), Amit Gattani (1%)

### **Brad Power**

We're honored to have "Dr. Tom" Incledon with us today. We've had several sessions on exercise. This was an interest for all of the prostate cancer patients because many are on androgen deprivation therapy, so they lose muscle, and they may have issues with heart health. Many people have weight issues one way or the other, needing to lose or gain weight. It seems like exercise is the treatment that just keeps on giving. Exercise is medicine.

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We've had a couple of sessions on exercise. Cathy Skinner talked about some of the exercises that she's used as she has coached people with cancer. We had Kerri Winters-Stone, a PhD researcher at OHSU who does research on exercise for musculoskeletal health. She gave us some of her research results and insights.

We met Dr. Tom because of his work in exercise for cancer, and the things that he's done given his background in exercise. We were particularly intrigued because he's running some of these things in a classic academic clinical trials background. He has a doctorate, and he's an academic as well as being a competitor in strength competitions – a very interesting combination. We thought that he would have an interesting conversation with our community.



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**"Dr. Tom" Incledon 3:33**

I want to first provide a little bit of context for the exercise programs I prescribe.

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## Integrative Medical Center

- Various professionals working as a team, that you don't see in hospitals
- Variety of tests not usually done for patients:
- Tempus Labs - 648 cancer-related genes in tumor tissue with a matched normal sample as a reference, as well as tumor whole RNA transcriptome for comprehensive and unbiased gene rearrangement detection
- mProbe/OncoOmicsDx - uses mass spectrometry, to precisely measure tumor protein expression to anticipate patient response or nonresponse to available approved and clinical trial therapies.

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We're an integrative medical center. When we talk about exercise, it's in the context of everything else that we're doing. I wanted to go over what else we are doing here. One of the comical statements that a lot of my colleagues would say about me is that somehow I've managed to get oncologists, chiropractors, naturopaths, and homeopaths all on the same team working together without killing each other. Any one educational background realizes these worlds are so far apart, they see disease and health very differently. I've tried to get people with various levels of educational bias and research backgrounds together.

Imagine if you were on a football team and one guy has a certain offensive strategy and another guy has a different offensive strategy, then you put them on the same team. There'd be a lot of tension in that room. We've managed to get all these guys together on the same team. It's enabled us to come up with really cool and unique strategies to the level that our cancer patients are gaining muscle, and specifically, our prostate cancer patients are gaining muscle. That's one measure.

You might ask, “How do you know if you're going in the right direction when you're starting some therapy to treat the cancer?” Well, you shouldn't be losing your hair. You shouldn't be getting weaker. You shouldn't be getting more frail. If those things are happening, that tells you that

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overall the strategy is not that effective. Because what will happen eventually is, if the cancer doesn't get you, the loss of all the muscle, the loss of the bone density, the loss of the ability to stand, well, that's going to do you in.

In order to prevent this from happening, I wanted to give you an overview of how we approach it. That way, **you're not just hearing exercise out of context, but you're going about the exercise portion in the context of everything else that's going on.**

I'm summarizing data we've collected on over 200,000 people. You're going to have to give me some privileges to make some conceptual leaps given the amount of time.

If you were to simply Google, “How many gene tests does ... do?” and fill in the blank, the lab could be Guardant, Foundation Medicine, Caris, Signatera, Tempus Labs, etc. You could find in seconds that Tempus Labs right now is the number one lab for testing the greatest number of genes in tumor tissue. Why is that important? Because that then gives you more options for different treatments that are available as far as the genetics or genomic side. You could also in a blood test, right now offering 105 genes, but they're pretty soon going to roll that up to 525 or 530 genes. Again, why does that matter? More treatment options right off the bat. You're not stuck with just treating the label of the disease like prostate cancer. You have other possibilities.

**The problem with genetic testing is that it's not a guarantee that's what's driving the cancer. In order to really see what's going on there, you have to do some proteomic testing.** Right now the best lab for that would be mProbe OncoOmicsDx. **You have two different worlds, basically, genetics versus proteomics. They're going to tell you different things about the cancer in someone's body. In my professional, scientific opinion, you want both sets of information.** That's what your oncologists should be looking at in deciding what is the best therapy or treatment strategy in the chemotherapy and immunotherapy world for the individuals they are looking at.

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## Integrative Medical Center

- Other testing:
- Environmental chemicals – they prevent chemo from working
- Microbiome – can enhance or detract immune function vs cancer
- Nutrients in serum and cells – when low, immune responses are impaired
- Lymphocytes responses – what cells are low vs high?
- Above is used with exercise to enhance immune responses

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Probably that alone is why it doesn't work 100%. Why doesn't it help every single person where we have data? Because there are other variables that matter. Now we'll switch over to other variables that matter.

**Environmental chemicals:** There are thousands of studies now showing that environmental chemicals not only damage DNA and could cause cancer and **disrupt your endocrine function, they also prevent chemotherapy and immunotherapy from working.** If you really want to get the best results possible, you'd have to know what's going on, what's in a system that interferes with stuff from working. I can tell you from direct observation that when we've tested regular people, any human that walks through our doors, every person we've ever tested, has environmental chemicals. I'm using the term here very generically, but think of it as stuff that humans have made and dumped in the environment. It does not occur naturally, some stuff that does occur naturally, and heavy metals. You have those three categories, and I'm just storing them in one term for this presentation. We find people loaded with that stuff all the time, including myself, my wife, my daughter, and other family members, so people with no evidence of cancer who are loaded with this stuff. When we look at the people with a cancer diagnosis, the levels are significantly higher. It sets the stage that there's probably a relationship here. And unfortunately,

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that's ignored in standard of care medicine right now. You're not really getting the best possible approach if you're just looking at the genetics and proteomics and ignoring everything else.

After the environmental chemicals, there's tons of data now looking at the microbiome.

**"Dr. Tom" Incledon 9:27**

I mentioned Tempus Labs for genetics and mProbe OncoOmicsDx.

I want you to get a visual. Consider the KEGG pathway map. (KEGG stands for the Kyoto Encyclopedia of Genes and Genomes. It is a database resource for understanding high-level functions and utilities of the biological system, such as the cell, the organism and the ecosystem, from molecular-level information, especially large-scale molecular datasets generated by genome sequencing and other high-throughput experimental technologies.) These are known pathways, and different areas of cancer that are so far defined. There's a lot more to this that's not defined, but this gives you a visual of why it's so difficult to treat cancer. I'm not going to go into things like tumor heterogeneity and all these other obstacles. The point is it's a very complex phenomenon that's got multiple factors.

[Article “Exposure of androgen mimicking environmental chemicals enhances proliferation of prostate cancer (LNCaP) cells by inducing AR expression and epigenetic modifications”]

Why did I talk about environmental chemicals? Well, because here's a paper from 2021. There are thousands of these papers. “Exposure of androgen mimicking environmental chemicals enhances proliferation of prostate cancer cells by inducing androgen receptor expression and epigenetic modifications.” Basically, what we're saying in English is that even if you're blocking the androgen, that doesn't have anything to do with the androgen from the environment that is in your body. You're not blocking them because they're already in your fat, and as you move around they're getting out of the fat, and they're binding to the prostate cancer cells, and driving the cancer to grow and spread. This is why you need to look at all these variables because just taking a drug that blocks you from making your own natural androgen isn't getting rid of all the androgen in your system.

I mentioned the **microbiome**. It is addressed in a 2018 paper, “The microbiome and prostate inflammation in prostate cancer”.

We used to think, going back and summarizing over 40 years of research, that all cancer was cancer. Then we learned that's not true; that breast cancer, colon cancer, and prostate cancer are different cancers. We thought all prostate cancer cells were the same. Then we learned that's not true. As they started doing biopsies of different tumors in one person, they found each tumor has its own microenvironment, and some of the tumors are different. Today we know that within a single tumor, the cells are not all the same. And not only are the cells not all the same, there's bacteria, fungi, other types of organisms infiltrating that tumor. To impact that tumor

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environment and change the growth and spread of cancer, there are a lot more variables than we thought about previously that have to be addressed.

What I'm doing very quickly is summarizing how we address it here, and all of the background testing that's done. That way, when we're figuring out an exercise regimen, we have a better game plan than just walking through the door and doing something.

I mentioned the environmental chemicals and microbiome. We also measure micronutrients. There are a wide range of vitamins and minerals, essential amino acids, essential fatty acids, other antioxidants, and other things that impact primarily lymphocyte responses. A lot of times patients will come in, and they'll say, “Oh, I got cancer, and I was healthy. I don't know how I got cancer. I have to strengthen my immune system.” Those generic statements may be somewhat true, but they're not precise enough to really help you make a decision on what to do. In order to know what immune cells to increase, you have to know what the values are. In other words, what are the natural killer cell levels? What are the cytotoxic T lymphocyte levels? We measure all these things and responses to various stimuli.

Why is that important? Because that's one of the things we can measure acutely, and make sure that it's actually improving. We don't just tell someone to come in and we are going to strengthen their immune system. We take objective measures. We look at where their immune system is dysfunctional. Then we figure out how to get it to, let's say, normal, and how to get the magnitude of pulsatility enhanced, so that they have a greater increase in the cells that fight cancer when they exercise. That's all the stuff that's done ahead of time, or before we see someone.

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Now as far as the exercise, think of our facility as a hybrid of a gym and an outpatient medical center. We have the ability to train anyone with no arms and legs all the way up to Olympic level athletes. We have a wide range of resources available. We get into things that most people have never heard of. We play with things like the material of the bar. What are they made out of? How does that transfer forces to the body? In other words, how do I get your muscles stronger without aggravating your joints or cartilage? How do I make sure that what I'm doing is getting better control of your brain, engaging your muscles versus just going to an idiot exercise where maybe it feels good, but we don't really know what the payoff will be later on. This is the level of detail that we approach exercise. A level of detail that you're not getting into at a gym, and you'll never see at a hospital, primarily because the hospitals can't monetize it at this level.

## What Is EWOT?

- EWOT = Exercise With Oxygen Therapy
- Room air oxygen is concentrated and stored in a bag
- You exercise while breathing through a mask connected to a hose connected to the bag
- Breathing in higher concentrations of O<sub>2</sub> (>40%) can increase performance and enhance recovery
- How will this benefit you?

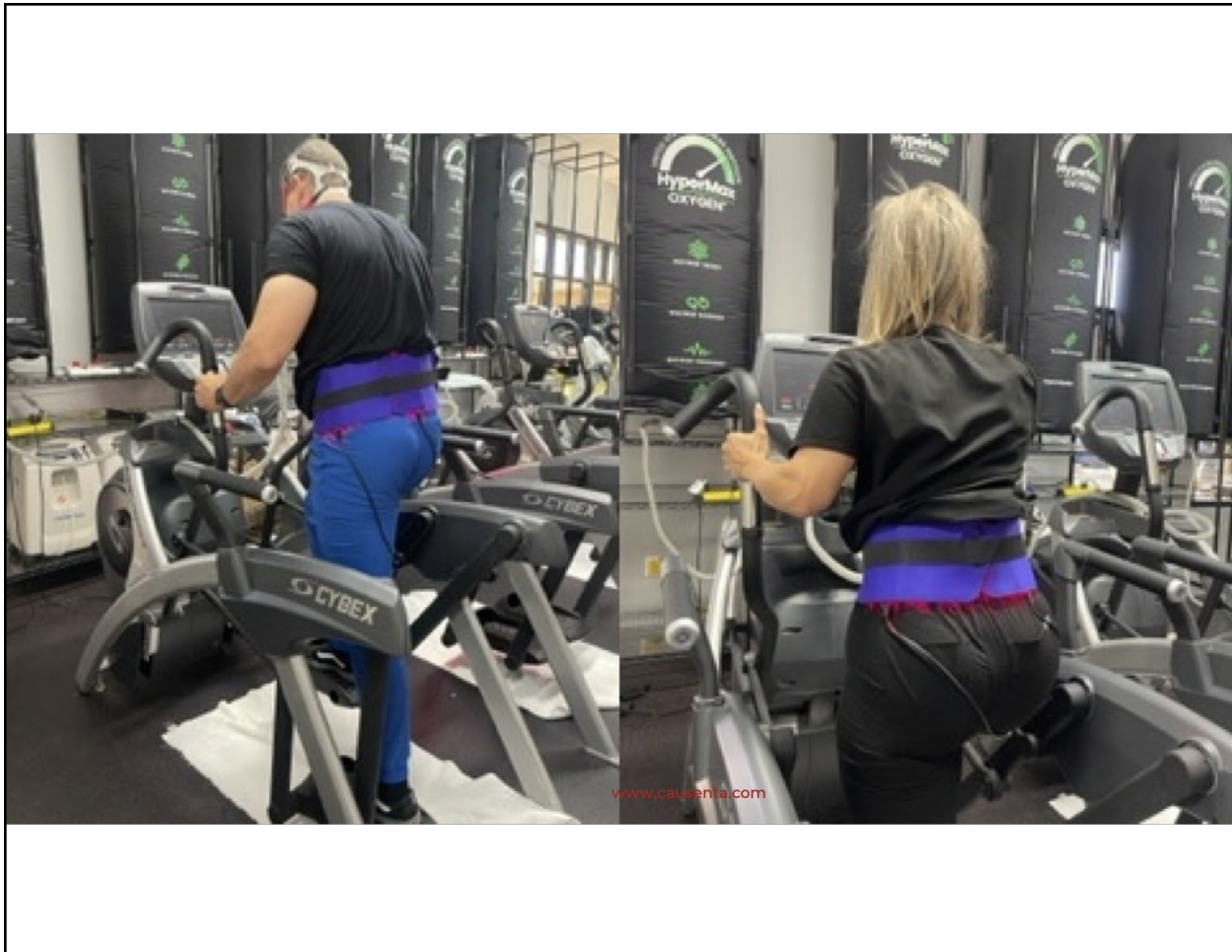
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The main thing I'm going to focus on today is something called EWOT: exercise with oxygen therapy. This was done as far back as the 1940s and 1950s. If there's earlier evidence of that, I'm just unaware of it. I don't want to discount prior scientists that did homework and stuff, but I'm just not aware of it. However, what I found very fascinating is basically German physicians, these were MD/PhD guys, that worked differently. They were in a gym, if you will. I noticed that all these people would have a variety of illnesses. It could be things like Alzheimer's, Parkinson's, autoimmune conditions, and cancer. They were doing very simple exercise protocols by today's standards while they were breathing in oxygen. They were claiming very dramatic improvements in health and fitness markers. If you were reading it for the first time, it would almost come off as far-fetched. It didn't make sense. This guy says he's breathing oxygen while squeezing a ball, and now he can walk again? The guy that was bedridden, just squeezing something like a ball in his hand, and breathing in extra oxygen. You're like, “How does the ball in his hand connect to his brain, helping his body move again?”

In 2018, maybe a little bit earlier, I was hired by a company that sells exercise oxygen therapy equipment, and they said, “Look. We're seeing spectacular outcomes. We have people calling us crying, leaving testimonials that are unsolicited, like, ‘Hey. This stuff has changed my life.’ We don't have any basis for understanding how this is working. Could you do some research?”

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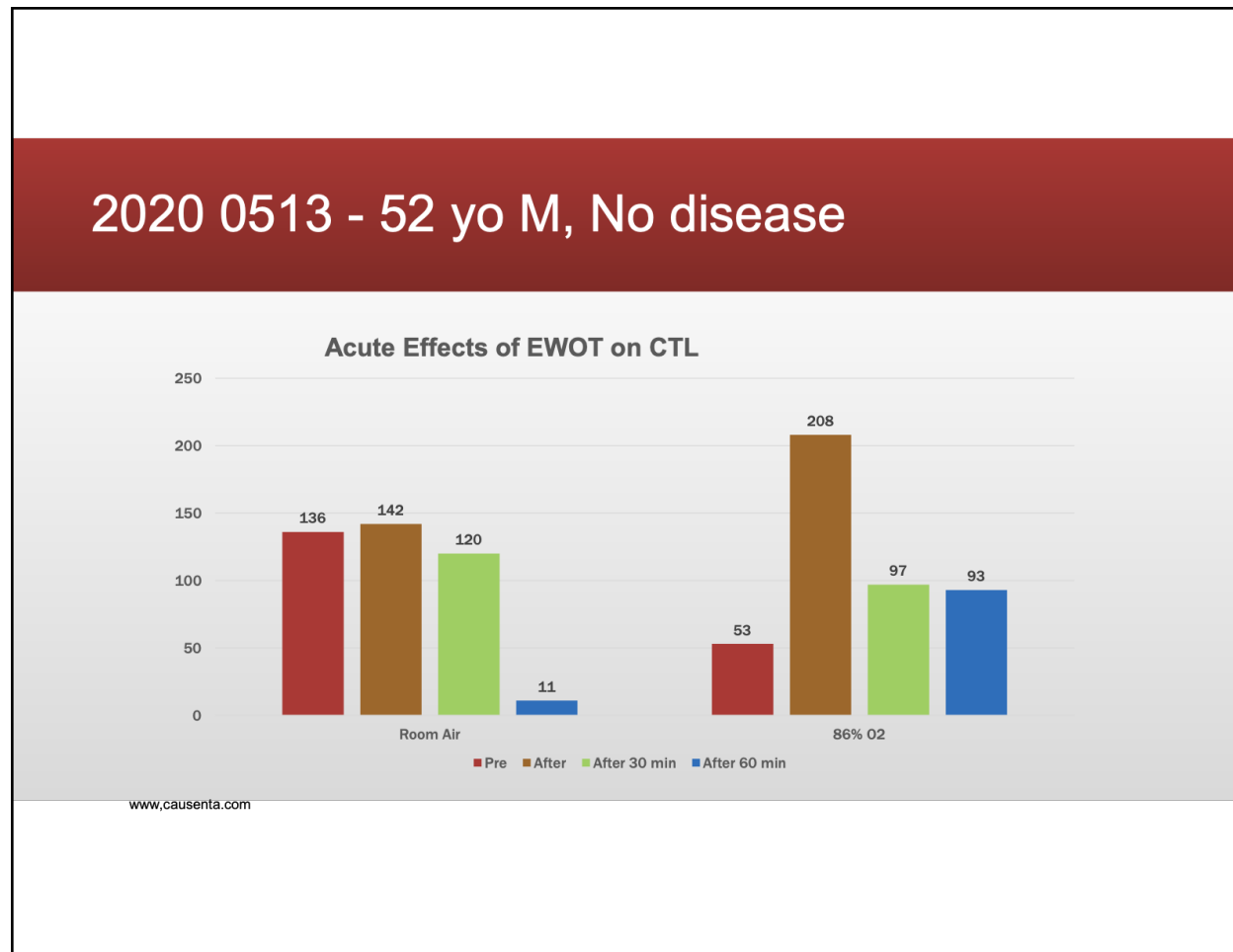
So we put together a proposal, they accepted it, and I started drawing blood before and after different workouts.



I want to give you a visual. You have an oxygen concentrator. You could buy these separately. **The oxygen concentrator takes room air, concentrates it into a bag, and the bag has a hose that you breathe in while you're exercising.** The reason why I show it here with an elliptical machine is that of all the different movement patterns we tested and evaluated, exercising upright got the best responses from the immune system. In other words, if you were sitting on a stationary bicycle, if you were walking on a treadmill or running on a treadmill, those movements did not produce the same level of increase as using both your arms and your legs at the same time. I don't work for Cybex, and I don't try to promote their equipment, but the reason why I got this particular unit is that the resistance when you're moving can go from zero to 400 pounds, and the incline can go from very flat, level, to really, really high. The reason why I mentioned that is with a single device, you have a wide range of capabilities, so that even if someone's very frail, they still can start out at zero and progress their way up. And if someone's very fit or very strong at 400 pounds of resistance with the highest incline, even offensive linemen are going to have somewhat of a hard time with that. We integrate a lot of therapies to save people time. My professional opinion is that people should not be a victim of their disease. It shouldn't be a

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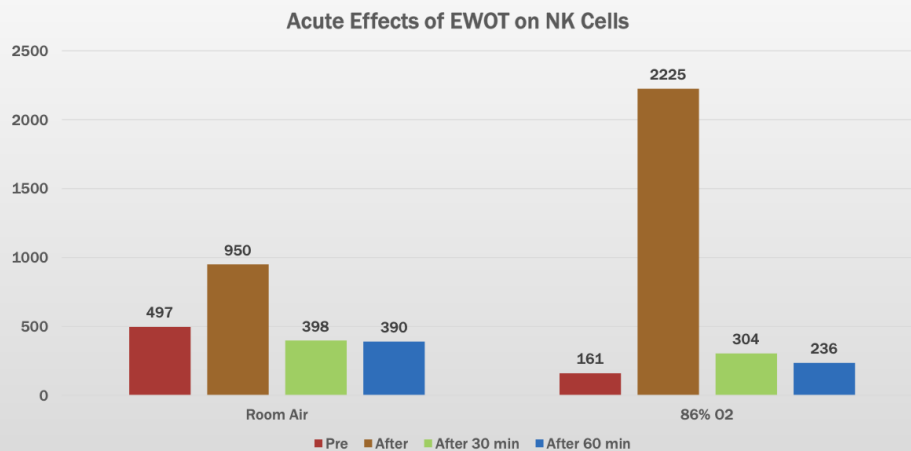
prisoner trapped in the healthcare system, getting treatment for hours a day and missing their life. We figured out how to stack multiple therapies together. Once we get someone dialed in, we can get four to six hours of therapies done in about two hours. The reason why patients love us so much is we give them way more free time with their life. They're not stuck going from IV to another therapy to another therapy and then life is passing them by.



This is some data from 2020. Think of this as a normal control: a 52 year old guy. I want you to see 15 minutes of exercise with oxygen therapy. These are the cytotoxic T lymphocytes, the increase from 142 to 208, an increase of 66. You might say that's no big deal. But what you have to understand is, that's times 1,000, and that times 27,000. We're saying that difference times 27 million, and that's the increase you get. I made the numbers smaller scale, so you could see everything on a slide. So an increase of 27 million cells that are fighting cancer took only 15 minutes. That's the main point you should take away from that slide.

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2020 0513 - 52 yo M, No cancer



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There are other cells that fight cancer, and they're called natural killer cells. Here's the same exercise, a 15-minute session, and it goes from 950 to 2225. It more than doubles. Again, it's that number times 27 million. These are huge increases with just 50 minutes of activity. By the way, after people are doing it, they say they think more clearly, they feel like they have more energy, and their joints ache less. My point is the benefits of doing it are so profound throughout the body that almost every person I've ever worked with says, "I want to come back and do more of this because I like the way I'm feeling." The compliance rates are extremely high, almost 100% because in general, people want to do stuff that feels good.

**Rick Stanton 19:58**

It looks like after there's actually less cells.

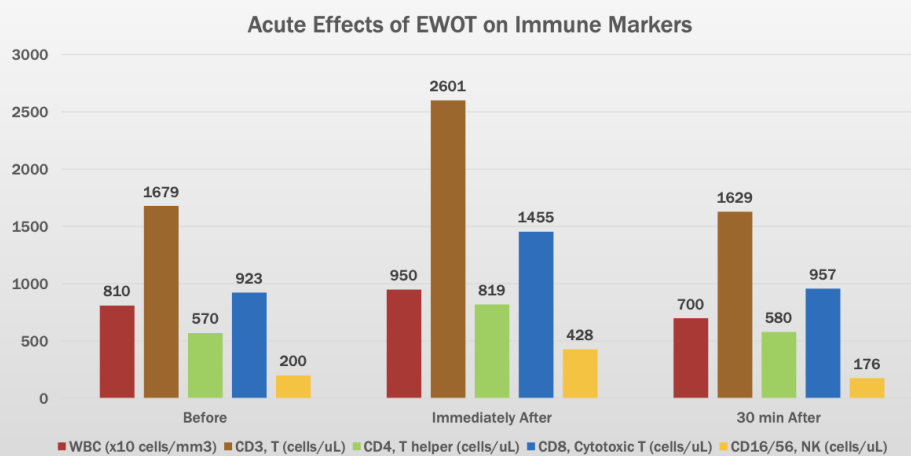
**"Dr. Tom" Incledon 20:06**

You're talking about numbers here. Yes. The normal response is, you have a baseline value, it goes up, and it comes back down. The curve would go up and down as the same on both. I'll get to why these numbers are a little bit lower in a second. Keep in mind, at this point here, no

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one in history has ever done this level of data collection. It gets back to all the research on a cure for cancer. Why are there no detailed studies about how exercise can improve the immune cells that fight cancer?

### 2020 0601 - 88 yo F, Lymphoma, Previous chemo



This is lymphoma. You guys probably have more specific concerns about prostate cancer. But I want you to see the logic and flow here. This is data from June 1 2020. I tried to put a little bit of a timeline so you could see how recent this is. This is an 88-year-old female. She was going to see a colleague of mine at a large center in Arizona, and had a lymphoma diagnosis several times. This was an easy-to-treat lymphoma. She goes and gets some chemo, the lymphoma is gone. A few months later, the lymphoma is back. This went round three times. Finally a colleague of mine over there said, “Look. Go see this guy and have him do some additional tests and see what's going on.” Our initial pattern that we tested were a greater range of immune markers as I did on a previous slide. We add the data. I just want to simplify it on the other slides as the same pattern: things go up and come down. What I didn't have until this case, well, actually a little bit before this, was any data on a plasma microbiome. I want you guys to see something with your own eyes. This is the same woman. This is the same blood draw time points. The difference is we got multiple tubes. One tube is going to Quest Labs and another tube is going to the Periomics Labs. Quest was measuring the immune parameters

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there. Periomics was measuring the plasma microbiome biomarkers. We discovered in her first blood draw that she had two bacteria from spiders, and another bacteria from soil. So the main thing here is that it was perplexing for me. This is outside my area of expertise. Everything I know about these organisms is that they can't grow in any human body. In other words, if a bacteria has evolved to grow in soil, you know, it's not a liquid environment. It's very high in oxygen and other chemicals in that environment. All of a sudden you're putting it into the blood. How does it survive? I spent some time discussing this with the head of immunology at the lab. And he basically said that these bacteria are known to hide inside of red blood cells and white blood cells. Where's that data? I don't know. Show me some papers that spell that out. Because the way I was educated in medical school, if you have bacteria in the blood, that's sepsis, and there shouldn't be bacteria everywhere. What she educated me on is, there's quite a bit of evidence that there are organisms in the blood that do survive. That got me thinking about the tumor microbiome. It got me thinking about bacteria in other areas of the body. What I want you to see with your own eyes is on the first blood draw, look at the counts for these organisms. These are DNA counts, not necessarily linear to how many different organisms. But notice, immediately afterwards, that's 15 minutes, nothing is showing. 30 minutes after that nothing is showing. Three months later, nothing is showing. She never had lymphoma again. So given the data that we collected, I can't tell you like exercise killed her cancer cells. The data doesn't really show that. But the data does show that she has a dramatic increase of the cells that kill the bacteria while she's exercising. And then when she's done exercising even months later, we can't find any evidence of these organisms. That opened our minds.

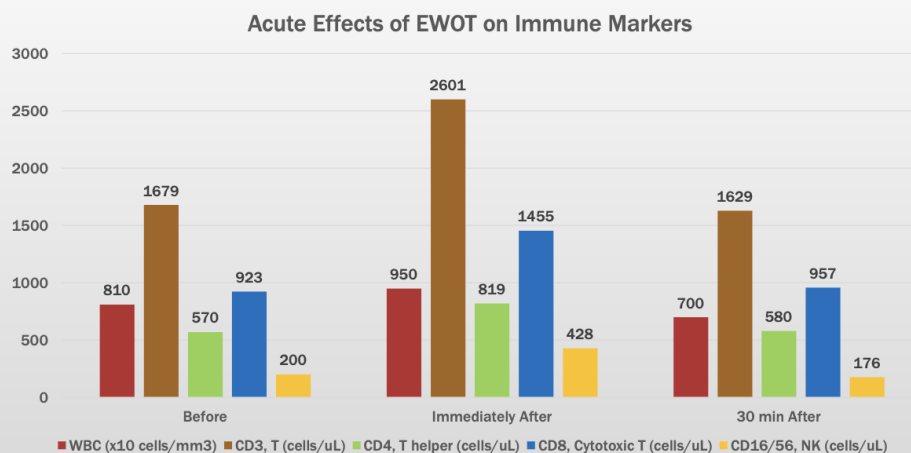
**Rick Stanton 24:34**

You said the cells that killed the bacteria were CD8 and natural killer cells. I don't think they target bacteria.

**"Dr. Tom" Incledon 24:58**

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**2020 0601 - 88 yo F, Lymphoma, Previous chemo**



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On this slide here you should see the cytotoxic T cells. I'm sure it's not on here, I don't have total T cells. Oh wait, no, I do see the CD3.

**Rick Stanton 25:17**

That's in the adaptive immune system, which is not focused on bacteria.

**"Dr. Tom" Incledon 25:24**

If we were to break down these categories here, we would see that there is an increase in the cells that decrease the bacteria. Our interpretation right now is that exercise stimulates the increase in the immune cells that kill the organisms.

Here is a good review of direct microbicidal activity of cytotoxic T-lymphocytes  
<https://pubmed.ncbi.nlm.nih.gov/20617144/>

**Amit Gattani 25:54**

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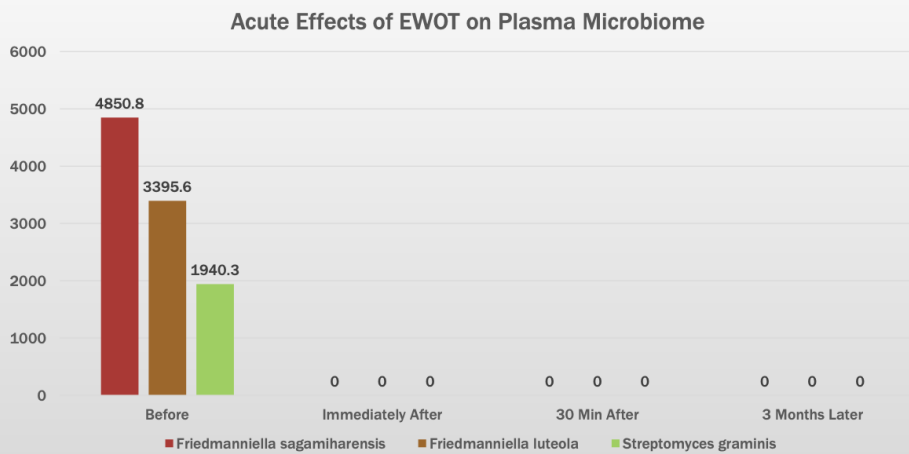
How many sessions of EWOT did this person have?

**"Dr. Tom" Incledon 26:02**

One session.

Let's just keep in mind, this is all done under double blind conditions. So nobody knows what's happening. Nobody knows that this is the same person's blood, let's send a lab analysis side.

**2020 0601 - 88 yo F, Lymphoma, Previous chemo**



**“Exercise to Boost Your Immune System to Fight Cancer” (Dr. Tom Incledon)  
[#49]**

## Acute Effects of EWOT on Microorganisms

### Bacteria

<i>Achromobacter insuavis</i>	<i>Acinetobacter harbinensis</i>	<i>Aliterella atlantica</i>	<i>Capnocytophaga sputigena</i>
<i>Corynebacterium durum</i>	<i>Corynebacterium imitans</i>	<i>Corynebacterium jeddahense</i>	<i>Corynebacterium propinquum</i>
<i>Dermabacter vaginalis</i> [ <i>Eubacterium</i> ] <i>nodatum</i>	<i>Gibbsiella quercinecans</i>	<i>Klebsiella grimontii</i>	<i>Klebsiella variicola</i>
<i>Leuconostoc garlicum</i>	<i>Methylobacterium brachiatum</i>	<i>Methylobacterium salsuginis</i>	<i>Mycolicibacterium doricum</i>
<i>Mycolicibacterium obuense</i>	<i>Neisseria subflava</i>	<i>Nocardiopsis synnemataformans</i>	<i>Paraburkholderia tropica</i>
<i>Paracoccus aestuarii</i>	<i>Paracoccus endophyticus</i>	<i>Paracoccus siganidrum</i>	<i>Paracoccus tibetensis</i>
<i>Paracoccus zeaxanthinifaciens</i>	<i>Porphyromonas canoris</i>	<i>Porphyromonas gulae</i>	<i>Pseudoclavibacter helvolus</i>
[ <i>Pseudomonas</i> ] <i>geniculate</i>	<i>Pseudomonas fragi</i>	<i>Pseudomonas fulva</i>	<i>Pseudomonas indoloxydans</i>
<i>Pseudomonas moraviensis</i>	<i>Pseudomonas plecoglossicida</i>	<i>Pseudomonas putida</i>	<i>Pseudomonas sihuiensis</i>
<i>Pseudomonas simiae</i> <small>www.causenta.com</small>	<i>Sorangium cellulosum</i>	<i>Tsukamurella tyrosinosolvans</i>	<i>Williamsia muralis</i>

These are all the different organisms we've now identified when we test a person. Initially, we don't know what's in their blood. As we test them, these are the different organisms that have been identified that were there initially. Then after a single 15-minute session, if you took this organism, it's found initially and never seen again. All of these organisms are gone in a single 15-minute session.

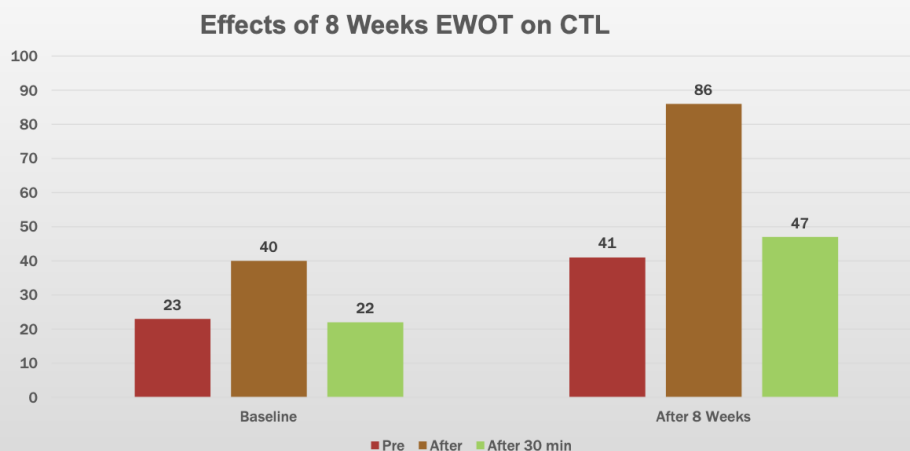
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<b>Acute Effects of EWOT on Microorganisms</b>			
<b>Fungi:</b>	<b>Aspergillus glaucus</b>		
	<b>Byssochlamys spectabilis</b>		
	<b>Malassezia sympodialis</b>		
<b>Virus</b>	<b>SARS-CoV-2</b>		
<b>Lyme PCR</b>	<b>Borrelia burgdorferi spp.</b>		
<small>www.causenta.com</small>			

That includes those wild bacteria on the previous slide, fungi, and SARS-CoV-2, and even lyme-related organisms. We have data showing that on all these different organisms, a single session of exercise while breathing oxygen eliminates any evidence of these organisms at future time points. This is now how we've translated that.

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**2020 1006 - 61 yo M, PC, MultiChemo**

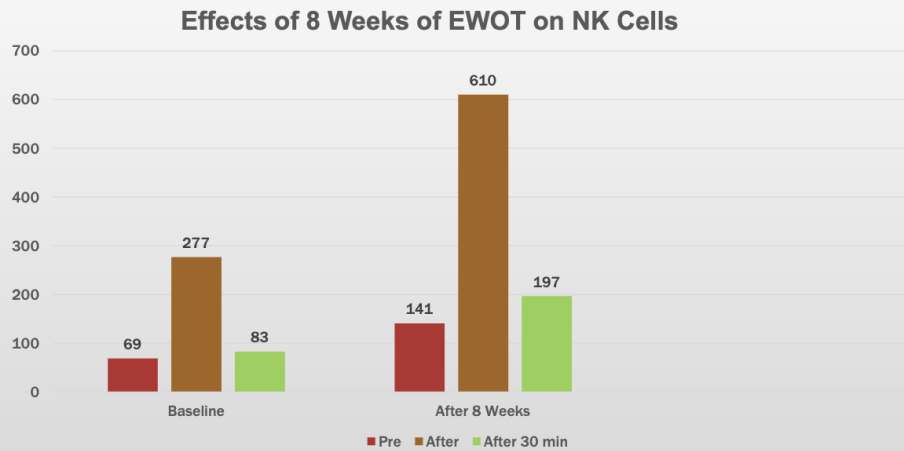


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This is a 61 year old male with prostate cancer. The relevant background is that this is a dad, and his godson is a defensive lineman in the NFL that we're working with. We started with his godson. The godson doesn't have any evidence of cancer, but his godson saw his godfather decline rapidly. He said, "Hey. I'm watching my godfather disappear before my eyes. Is there anything that can be done?" We spoke with the medical team that was in charge of his medical care. His cancer was very advanced. We didn't have any evidence that where he was that we could turn that case around and beat the cancer. However, we do have lots of evidence that we got him from the position he was in to a much better position. To be blunt, he was bedridden, and we needed a care nurse assistant to help clean him up because he was going to the bathroom in his bed. When we tested him, this was his baseline data. This is cytotoxic T lymphocytes.

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**2020 1006 - 61 yo M, PC, MultiChemo**

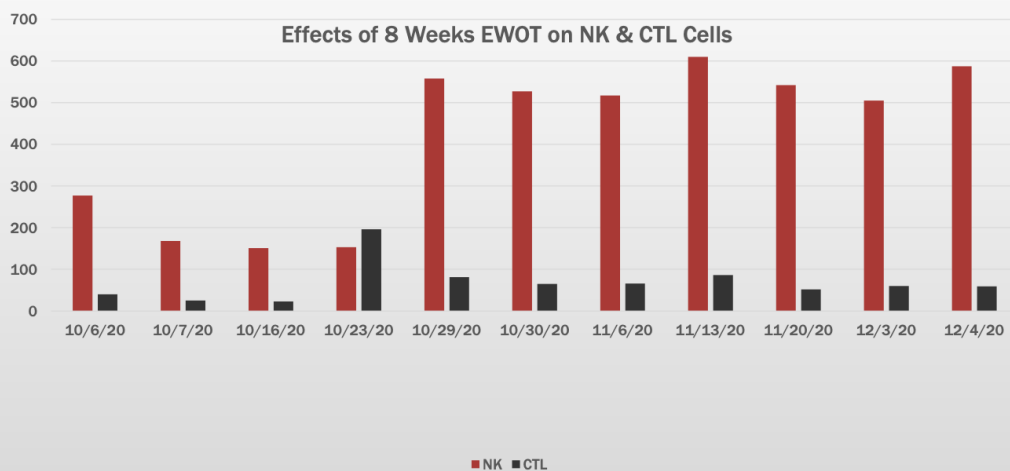


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This next one here is his natural killer cells. We were able to get him in and start exercising. He was barely able to do 15 minutes when he started.

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[#49]**

**2020 1006 - 61 yo M, PC, MultiChemo,  
Hospice, D3/1/21**



He should have passed away around the October 2020 time point. He got to March 1, 2021, when he passed away. What I want you guys to see is palliative care. He was put on several different chemos shortly after we started working with him. You could see, despite the number of medications he was on, there's roughly a two week phase where you don't see much change in the natural killer cells. But somewhere after that, you can see they definitely are much higher.

A couple of takeaways. We've now identified in a number of different patients with different cancers what's a good value versus a bad value. In this case there was no data on that. We learned over time that every patient that gets over 1800 on the natural killer cells, they wind up surviving their cancer, meaning they're still alive today. The patients that did not cross 1800, eventually, all of those patients have passed away. We didn't learn that until later, so now going backwards looking at this slide, you can see this poor guy was under 300. It would be a doctor's consensus of the medical team at the time if this is too far gone. Now, this is somewhat of a biased interpretation, because we're just looking at the two cell lines for the immune system. There's a lot of other stuff going on in this guy's case. But the main point I want to make sure everyone is aware of is that he was bedridden, and basically was given just a very short period of time to live. When we were done, he went hunting on six occasions, carrying nine pounds worth of rifles, and enjoying his life to his last minute. When he passed away, he went to sleep,

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he was not on morphine or codeine anymore. He was pain free. He was able to go out and do things at a level that most people didn't think he had cancer anymore. He still passed away from the disease. We definitely could say the quality of life is not even close. The amount of time beyond where he was given was way longer.

One of the things we've learned from this is that the medical system doesn't distinguish between lack of use and a disease process. It's all kind of lumped together. So when a physician sees a patient and says, “Well, you got X amount of days or weeks or months or years to live.” If we go to a physician, and say, “Show us your data. We kept track of everyone that left you. They went somewhere else and followed your advice. Where's the data on those people?” They don't have it. There is no data. Once you leave a doctor's office, they're not following you every month and saying, “Hey, where are you going for treatment, what else are you doing, and what kind of therapies?” It's ignored information.

### How Does EWOT Improve Immune Function?

- Exercise stimulates acute and chronic increases in CTL and NK cells
- EWOT increases blood O<sub>2</sub> more than exercise
- The extra O<sub>2</sub> allows you to do more work
- This increases epinephrine from the adrenal medulla
- The addition epinephrine stimulates more NK/CTL cells to leave spleen and enter circulation

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What did we learn from EWOT and immune function?

- Exercise stimulates acute and chronic increases in cytotoxic T lymphocytes (CTL) and NK cells.
- The exercise with oxygen therapy increases blood oxygen more than exercise.

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- The extra oxygen allows you to do more work.
- That additional work means, if you're fairly healthy, you're walking around with O2 saturation, let's say of 96 to 98. So we're talking about a 2% to 4% increase in the O2 saturation levels. But that little bit of 2% to 4% can allow you to do up to 25% more work. So it's a big payoff.
- This extra work increases the epinephrine from the adrenal medulla. And right now the thinking is that the epinephrine is what stimulates the immune cells. So what we're currently looking at is additional strategies to increase the cells. Now that we know we have a goal like 1800, for the people that are nowhere close, are there other things we can do to help them get above 1800?

"Dr. Tom" Incledon 33:27

### What We Have Learned

- Exercise stimulates acute and chronic increases in CTL and NK cells in healthy people and in patients with cancer
- EWOT does this even better
- EWOT also appears to eliminate pathogens in the plasma microbiome
- EWOT can improve fitness faster
- Hyperoxia increases immune markers faster to fight cancer and infectious agents

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I mentioned that the exercise stimulates acute and chronic increases in the cytotoxic T lymphocytes and natural killer cells in healthy people and in patients with cancer. The difference might be where they are starting, and where they go. Exercise with oxygen does this way better. We also have ample evidence that it eliminates all kinds of pathogens, which is outside the scope of this presentation. These were novel findings that no one else was reporting. But when I

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talked to different immunologists, what I found that was surprising was that a lot of them knew this. When I would ask, “How did you notice this when it's not really published anywhere?” They would tell me that in their in-house data, they found that if they had people at rest, they didn't see as many things in the blood and plasma microbiome. But if they had them jump up and down and got a blood draw, they found more of these organisms. Then I asked, “Where are these organisms coming from?” The first response was from inside cells. Later on we did microbiome testing from the sinus cavity from the back of the mouth, urine, plasma microbiome skin scrapings, and lower GI microbiome tests. We did microbiome testing from lots of different areas in the body. The DNA of those organisms was either seen or not seen. Let's say, if someone brushed her teeth too hard, there will be a vector by which the bacteria in her mouth can be discovered later in the blood. A lot of fascinating stuff came out of this from the microbiome.

### How Does This Benefit You?

- After testing over 200,000 people, nothing else we have tested increases immune markers better
- You can simultaneously improve brain, heart, lung and muscle function
- You enhance recovery and eliminate inflammation markers faster
- All this in 15-30 min 3-7 times weekly

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How does this benefit people, collectively, through the different labs and different doctors at our institution, we have probably tested, over 200,000 people? **When I look at all the different drugs and supplements and strategies that have been tried, I've not found anything that comes even close to stimulating the increases in natural killer cells and cytotoxic T lymphocytes.**

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One of the limitations when we're doing this testing is we were using a lab which grouped a lot of stuff together on the immune responses. I'm using a new lab, [Cyrex Laboratories](#), which does a “lymphocyte map”, which breaks out all the immune responses to a much greater level of detail. It addresses some of the questions asked earlier. I don't have those slides here. Instead of having one data point, we now have over 20. We're seeing all these other details. We're seeing people make improvements in brain function, heart function, lung function, and reduction in joint pain. Again, with 15 minutes of exercise. The minimum will be three times weekly. If someone is very frail, we exercise them every day. It gets them from where they are – meaning they can't stand and can't walk – to where they have their functional independence faster. We can usually get people in wheelchairs walking anywhere from the same day to 12 days. That's usually the time it takes. So that they're strong enough to do certain things.

**Brad Power 37:47**

A number of the patients here are interested in learning more about how they can access the therapies you're talking about. Do they need to go to Arizona? Or can you operate virtually?

**"Dr. Tom" Incledon 38:14**

The labs provide onsite phlebotomy services. The simple answer is that people don't have to come here once you have the information. We don't know what the lab results say yet. Once the lab results come in, the way that we interface with people is we look at the lab results. It's like the format you might see on lab results from Guardant or Foundation with FDA-approved therapies for that given indication and FDA-approved therapies but for a different condition. Then we have non-FDA-approved therapies. Where it's interesting is that some of the botanicals, like IV resveratrol, IV curcumin, or ivory sulforaphane or quercetin provide benefits to a large number of pathways. One approach might be using two to five chemotherapeutics or immunotherapeutic agents. Then you go over to the botanical world, and maybe one or two agents can duplicate everything that was done in the non-botanical, standard of care world. People are put in a position to make a choice where they feel more comfortable, and then it's up to them whatever they want to do. We can guide them which direction to go from there.

**Brad Power 39:45**

You just spoke about botanicals, which is like supplements, which is more like integrative oncology, and less the focus that you had here on the exercise. What kind of exercise regimen do you recommend? How can people get personalized guidance on exercise?

**"Dr. Tom" Incledon 40:07**

First, if someone were to contact me and say, “I can't do any testing,” I would always recommend some objective data first, because you're not going to get the best results. For example, if you have several nutrients that are low, you're going to be working out in the gym and making progress at a snail's pace. Since time is so critical, we want to do things in a way

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that enhances the rate at which we experience results. We don't want to do things in a way to drag them out over time. We want to do some micronutrient testing, we want to look at their immune markers and environmental chemicals. If that stuff is messed up in the background, they're not going to get the best results from their exercise.

Let's assume now that's addressed somehow. And now we have someone that we can address the exercise, and we'll see where they are at. **We have a model, a way of looking at how you enhance the function of that system, which is to look at what's rate limiting.** For example, yesterday I had an individual come in with a very advanced prostate cancer, and I asked him, “What are some of the problems you're having the greatest difficulty with right now?” And he said, “Well, if I fall down, I can't get up.” I said, “Okay, no problem, that's going to be your new exercise program.” We're going to put him on the ground and see where he's weak and, and figure out how to get them stronger. So he can come up off the ground, and not be afraid of falling. We brought him and his son into our gym. I laid him on the ground. I had him use a bench to get to the floor, and then we studied where he's basically weak, and it was in his left leg. We developed an exercise program around where the weakest muscles are.

**Saed Sayad 42:08**

Based on my personal and close friends' experience, I think the combination of these two (traditional drugs and less traditional drugs, like botanicals) can do magic. Sometimes we don't know exactly why. The doctor mentioned quercetin and the other photonic drugs. All my analysis on omics data supports this suggestion. These drugs show positive results in many, many cancers.

**Brad Power 42:56**

Saed Sayad is in Toronto. He looks at public data sources.

**Saed Sayad 43:05**

I'm also a medical doctor, and a biochemist. My personal experience and analysis on the omics data all support your point.

**Jim Ward 43:42**

Do you perform labs/tests of clients before EWOT versus after EWOT? Seems like there would be an interest in knowing the comparative impact that exercise without EWOT has versus with EWOT.

**Russ Holyer 44:18**

Have the positive changes that have been shown been demonstrated through testing versus a placebo?

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**"Dr. Tom" Incledon 44:32**

First, the simple answer is yes.  
In terms of when you say like a placebo, or control, what do you mean?

**Russ Holyer 44:46**

Somebody's not exercising

**"Dr. Tom" Incledon 44:50**

A placebo in this type of situation is not going to be very useful because the oxygen concentrators are very loud. If they're running, you know they're on. Usually you have a face mask when you're doing that. There are some practical limitations. For example, we could set it up where there's a generator running, and there's no oxygen going into the mask, but people would feel the difference in airflow right away, and they would know. We could probably set it up so it's like room air going into the mask. But that would be cost prohibitive.

We tested people without the EWOT system running and compared that around 2019 and 2020. That's how I was able to say earlier, just increasing oxygen saturation a very small percentage, anywhere from let's say, 1% to 4%, that little increase in the oxygen saturation of the same red blood cells, results in up to a 25% improvement in exercise. For most people the rate limiting step is they don't have enough oxygen at the end of the electron transport chain to allow them to continue to exercise. We're getting rid of the weakest link in that system, and that's how we're able to do more work.

**Jim Ward 46:21**

We have all heard, read, and understand to some extent the benefits of exercise as far as boosting your immune system and cancer control. We are all very curious and would love to know more about the benefits, quantitatively, of that exercise. And if you exercise, what enhances it? It sounds like you did a test and got results that show that, on some level, exercise provides a benefit. I'm personally very curious as to the extent of that benefit. If you've got lab results that demonstrate that benefit, I'd love to know what that is, without EWOT. Because I don't have any current plans to jump onto the EWOT bandwagon, so to speak. I don't know what that would entail. We just want to know, “How much does exercise benefit you in terms of those numbers before you introduce EWOT?”

**"Dr. Tom" Incledon 47:50**

My current line of research is looking at multiple strategies to enhance the immune response. To go backwards and take all that away, and just do exercise alone, is not really the focus of

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what I'm doing right now. Once you learn something works, you don't say, “Let me go backwards.” You want to say, “How do we make it better and better and better?”

What you're missing here is the context of time. Most of you guys look a lot healthier, a lot more able bodied, than the people I have coming in, who can't stand, or can't walk. I don't have six months to say, “Let's see what happens.” We need results fairly quickly. The bias of that kind of environment is that we're juggling. We're doing a lot of things at once. Because they may not be around 30 days from now. If we're successful in getting the results, we want them in the first 12 days.

On your question about some of the long term benefits: One of the biggest mistakes I see people making is they go, “Well, I exercise.” They come in, and we look at their exercise model. They have no plan of progression. They have no understanding of the difference between hyperoxia, which dramatically enhances brain, heart, lung, and immune system function. Period. Now that you know that, why would you not want to say, “Well, I won't do that if for whatever reason.” That just means you're going to make things harder. On the other hand, hypoxia, that means low oxygen, helps you add muscle faster. Those two simple things, just playing with oxygen concentration, even though it's very basic, and there are lots of studies on it, I don't see anyone making that part of their exercise strategy, to just do it all the time. That's one approach. But what you're trying to do then is to go with something in the middle that prevents you from getting the experience of the best possible environments. If you see your muscle mass is going down, you have to create a hypoxic environment. There's lots of ways to do that. We didn't cover that, because that wasn't part of this presentation. On the other hand, if you see your fitness is declining rapidly, and you want to try to get it the opposite direction, hyperoxia. If you were to just exercise normally, you'd be in the middle. You're going to get the average of the two extremes, which will work, but it's not going to work as well as creating an environment that enhances your ability to progress.

What I'm showing you here is that we've now moved towards looking at tools that help people progress faster, meaning under fitness, or if it was a different presentation and a muscle strength and put things in a different context. We have an 88-year-old woman maxing out pieces of cardio equipment in a gym. I want to make sure this is clear. This 130-pound woman is doing 400 pounds of resistance on a Cybex Arc Trainer. If I brought all you guys in and tested you, the odds are pretty high that very few of you will be able to do that much. You have to look at how this woman's fitness is progressing relatively faster than yours. This was stuff that we figured out in the 1980s. My research group under William Kramer, at Penn State Center for Sports Medicine, figured out how to take average women and make them stronger than average men at a time when women were told not to exercise. We've got four years of research that we've been doing. We've moved forward. Some of the stuff might not be as obvious as in other areas, but it's stuff that we've been doing for a long time.

**Jim Ward 51:52**

It's obviously a complicated realm.

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**Amit Gattani 52:01**

As a patient, what's involved for me to get a consultation? What's the cost of the service? How does it work? You're in Arizona. How long is the minimum period? You showed the chart that your treatment actually helped someone for a prolonged period of time. Can you help us understand the cost of service and time and what's involved in getting access?

**"Dr. Tom" Incledon 52:40**

After some initial contact, you fill out a form on a website. There's no charge for the first consultation. It's 30 minutes long. We go over your specific case, and point you in the right direction. Most people say, “Yeah, I definitely want to move forward,” just because it's logical. There's nothing that's shared that people say, “Oh, I'd never heard of that.” Or, “It's unreasonable.” After that most people do it by Zoom. It's more convenient. But you could physically come here. I didn't mention this earlier. But everybody's welcome to tour the facility. We give quite a large number of tours throughout the week. We have doctors from around the world come here particularly.

There has been a lot of interest in hyperbaric oxygen therapy. We have different groups researching that, because I've made some very bold statements that if you're doing that you're going backwards. Anyone that does EWOT, you see right away much better results versus hyperbaric oxygen therapy. I've presented different sets of data at other medical conferences about lying. Lying is never the solution. You want to be standing and moving. If you're not sure, just move more. It's that simple.

In terms of costs, it's \$360 an hour. People pay based on time, and typically the initial consult might be two to four hours. We usually try to cap it at \$720. That way people can get what they need and not have a fear factor of, “Oh, I don't know how big this bill is going to be.” From that consult we provide a list of recommendations. And those recommendations vary. The general recommendations that I made at the beginning as far as like transcriptomics, right now, I would do that with every person, regardless of their cancer or their staging. Because there could be data that would be gleaned out of that, that could really help someone in terms of the micronutrient testing, environmental toxins, microbiome, and stuff that's paid out of pocket to labs directly. That really depends on what people's budgets are and what they can afford. Those fees are determined by the labs, but we will give you a line item of everything. After you get all that, we have a conversation, and discuss what's easiest for you to implement. We have everything from people that can't afford any testing, unless their insurance covers it, to people that just do whatever they want, and are not worried about money. I don't make those decisions for people; they make that for themselves.

**Amit Gattani 55:24**

What is the cost of coming to your facility for an EWOT session?

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**"Dr. Tom" Incledon 55:32**

An EWOT session is \$150. Some people buy packages of 12 for \$1500. So you're getting a discount of \$300.

**Russ Holyer 56:06**

I was wondering how blood flow occlusion, blood flow restriction, or supplemental oxygen canisters might help? Because I know a lot of people have financial constraints. They are not going to be able to go out and get consults and whatever, even though they're minimal, due to service fees or whatever. Arizona is a long way away from some people. If they want to get EWOT, how can they do something similar that might have some benefit, in addition to their exercise?

**"Dr. Tom" Incledon 56:43**

Blood flow restriction training is the opposite of hyperoxic training. When I was talking earlier about hypoxic training, there are lots of ways you can reduce oxygen, getting to the muscle. The simplest way is to just hold your breath while you're moving. You're going to use up the oxygen in the tissue, and you're not going to be replacing it. For some patients, that might not be a smart strategy, because it may have an increased risk for disease. But the point is that in terms of expense, that costs you nothing. So you have everything from zero cost for tools you can get. There are lots of BFR (blood flow restriction) tools that restrict blood flow to the working muscle. We've got tons of these devices. Some of them are in the range of over \$7,000. After I analyzed all these devices, I found that we could get almost exactly the same results buying what they call “velcro cinch straps” from Amazon, for about \$16 to \$20. Think of it as like a belt, but it's small enough to fit around your arms or the top of your thighs, and it's got Velcro on it. You just pull it really tight, and then you put the velcro attachment on, and it holds the occlusion over, let's say, a blood vessel in the upper arm. So basically running it right between the biceps and the shoulder. Same thing, you're going up as high as you can on the thigh. Then you would use that while you're doing your weight training. The nice thing about that is that you can reduce loading, but still keep muscle protein synthesis rates high. You could actually get improvements in glucose clearance and in reducing cholesterol, and get single muscle growth when I went to lighter weights without stressing out your cartilage. That might be an advantage for people who have any joint concerns.

Some other nice things that are often overlooked is there's a lot of comments made about different diet strategies. Most of the diet strategies that are usually suggested are based on testing outside the individual, and then forcing that data on the individual. Where we are with precision medicine, we're way more advanced than that. You'd want to test the individual to see what's there. If someone can't afford testing, then by default they have to go with strategies that are based on data on other people. But if you can test your immune reactions, your genetic reactions, and your microbiome, that will give you a much better awareness of how your body

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handles different foods, and what type of food you should be consuming. I mention that because we're talking about anything you put in your body that gets in the blood, let's say like something you're ingesting, and then that could potentially feed a certain body. With approaches like fasting or intermittent fasting your micronutrient levels go down dramatically, and then immune function gets impaired over time, maybe not acutely, but eventually, and things like say a ketogenic diet disrupts the microbiome. Some of the strategies that have shown some improvement short term, when we got long term data on people, what we see is there are other things developing that run counter to the long term goal.

You mentioned being affordable and other ways to increase a hyperoxic condition. When you're exercising maximum weight, you're going to breathe in about 60 liters a minute, give or take. Basically, taller people with bigger lungs will probably take in more than shorter people with smaller lungs. When you're getting an oxygen concentrator, the best concentrators on the market now produce about 10 liters a minute. Most people, if they have that oxygen concentration set too high, they probably want to get a yield of eight liters a minute. So that means that when you're breathing in like this little nasal cannula, you're not going to get enough airflow to accommodate how much you need. That's the reason why having a system where the oxygen gets stored in a bag, and then you're breathing it from a mask, because then you get as much oxygen as you need. If you need 60 liters, you're going to get 60 liters. If you need less, you'll get less. So around, you know, would you just have a nasal cannula that provide some benefit? Possibly? I don't know that I haven't really tested that, you know, that environment. That was conditions, I should say, just because we really know, it doesn't produce the best biological outcome. When we're looking at the other end, how do we optimize results?

**Russ Holyer 1:01:34**

So there's no real hard data on supplemental oxygen? There is no little canister you breathe in or whatever? I wonder if there's something that somebody can do if they absolutely cannot get out to Scottsdale.

**"Dr. Tom" Incledon 1:01:49**

You don't have to come to Scottsdale to exercise. You can do that anywhere. You don't even need equipment. If you want to do EWOT, you get an EWOT system. If that's outside your budget, then you just don't do that. You just maybe exercise.

You could look at other options like exercising in a way that provides a progression that you improve your fitness. If you do more work in the same amount of time, that's going to provide a stronger stimulus to get those immune responses that I showed you earlier. If you're burning 10 calories a minute, and now you're going to 11 calories per minute, and then 12 calories a minute, and then 13 calories a minute, you would see that your peaks and your immune responses are higher over time.

**Rick Stanton 1:03:06**

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Let's say I want to do something today. I'm inspired. I've been doing what I call a “HIIT” (high-intensity interval training) workout on an elliptical, which is repetitions of 30 seconds as hard as I can and 90 seconds recovery. Is that better than just slogging along for 40 minutes on an elliptical?

"Dr. Tom" Incledon 1:03:51

The simple answer is that interval training is very, very effective. I'm dealing with people that may be at a lower level of fitness than you guys are. If I have someone that can't stand, and you're doing sprints on a bike, there's a big difference there. What I probably should have added is that we hit every one of our goals. This is internal to our center. It's more based on observation, not so much like hard scientific data. But our internal goal is that we get everyone to a level that they could do 1000 calories in a workout. To your point, they're doing more of a steady state exercise. With the stuff we have, they could watch a TV show, they could play their music, they could listen to podcasts, they could do whatever they need to do to get their head in a space where they're going to go. They're going to take anywhere from some beasts that do 1000 calories in 25 minutes – those are definitely like the genetic freaks of society – and then you have the guys that are more like normal that take somewhere like 90 minutes to get to 1000 calories, or want to get to 1000 calories.

What that does for us: at that level no one has any brain, heart, or lung issues. Think of it as that's our internal baseline level. You're now safe and fit enough that we can do whatever crazy stuff we want to do on the sprinting side with you, and not worry about a stroke or heart attack. Think of it like what they can do safely, with the progression, not just progression alone. Now, once they hit that 1000 calorie session, they'll probably do that maybe two times a week. In between, they're doing a variety of intervals. So it could be something like what you're saying where there's a work to rest ratio of like 1 to 4, or 1 to 3, Round air based on your fitness, but then eventually, it's going to go upside down. We'll have them sprinting for 20 seconds, and then do nothing for 10 seconds. So they get 20 on and 10 off. Then eventually we're working them up to something like a minute on, up to two minutes, if they're super fit. Some people respond ridiculously fast. They're going all out for near glycogen-depletion levels. Then rest 20 seconds and do it again. At that point we'll either have them using oxygen, or we're doing BFR training. One workout would be to use high oxygen while they're doing their sprints, so it helps them recover. Another workout would be no supplemental oxygen so roomier with calm occlusion straps on their thighs, and let's say their arms, while they're doing their sprints. We always have them doing all four limbs, unless there's a reason why they can't use a limb like whether it's that they're missing the limb, or there's joint pain of some kind or some other dysfunction, like maybe he just had surgery in that area. We use Echo bikes here, because it's got the upper body component with the lower body component. Think of them as being like the old school Schwinn Airdyne bikes from years ago. The reason why I use that is they could put one leg up while they pedal with one leg and their arms are moving, or they could put one arm down. They could pick and choose which limbs they use if they have some dysfunction. That allows us to get as many joints or limbs moving as possible. That's really the critical thing: to

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figure out a way to move as much as you can while you're doing the movement. Because that is definitely linked to better immune responses. Right now the intervals you're doing I would say is fine, just **look at ways that you can eventually work towards more work and less rest in that same amount of time.**

**"Dr. Tom" Incledon 1:08:11**

When people are doing sprints or intervals, in the first one to three weeks we get a sense of how they respond. **We're looking at things like heart rate and blood pressure afterwards.** We usually see some people take a while to respond, but eventually we're getting to 20 sprints. By the time they get there, they could look like they're not going to make it as far as their fatigue level. And then within a minute, they're perfectly fine. You see the recovery post exercise is better and better and better. That's one way to gauge where you are. **For example, if it's taking you four minutes to recover, then the exercise stimulus was too much for your current level.**

**Rick Stanton 1:08:52**

There's a guy called “Dr. K” or “Dr. Kevin”, and he does insane 20 minute elliptical HIIT workouts. It's two minute intervals, with 30 seconds max and 90 minutes rest. That's what I've been doing.

**"Dr. Tom" Incledon 1:09:12**

Well, keep going. I don't know how long you've been doing it, but eventually you're going to adapt to that stimulus. You're going to have to mix it up a little bit to see if you can avoid a plateau and continue to make progress.

**Rick Stanton 1:09:22**

You said you try to do a Tempus test on everyone. Is getting tissue an issue?

**"Dr. Tom" Incledon 1:09:35**

With Tempus you do an initial test on tissue, unless you have another biopsy and you want to see what's in that biopsy, and everything after that is blood. One of the ways you could evaluate your treatment response is just do that every 30 days, and then you're seeing what's showing up. And what you're hoping is you get to a point that nothing is showing up in a blood test.

**Rick Stanton 1:10:00**

By Tempus blood tests, do you mean mutations?

**"Dr. Tom" Incledon 1:10:05**

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They do the XT test on tumor tissue, and the XF on blood. Their XF test right now is doing about 105 genes. Somewhere around May or so they'll be rolling out the 523-gene expanded panel. We're one of the groups that's going to be having that available for patients. I don't know their deployment schedule. For now, I would just say 105 genes from blood until they get it widely available throughout the US, and then it'll be 523 genes everywhere..

**"Dr. Tom" Incledon 1:10:39**

One of the things about working with Tempus is that as part of our relationship, because of the volume of tests that we do with different labs, we can get things positioned where we can help people save quite a bit of money. The most expensive tests are some of the genetic testing and perhaps proteomic testing. Those tests out of pocket can easily go for \$3000 to \$6,000 for one panel. Usually we do pretty well at helping people get insurance coverage. If they have insurance, their out of pocket expense may be down to \$0 to \$100. That's something that could really go a long way to give you more treatment options later on.

**Brad Power 1:11:23**

We have relationships with both Tempus and mProbe.

**Brian McCloskey 1:11:31**

I've gotten the Tempus XF+ blood test (for 500+ genes), and several other people have gotten it.

One of the great things about prostate cancer is that we have PSA as a biomarker. Are you tracking PSA for prostate cancer patients that are doing your program?

**"Dr. Tom" Incledon 1:12:02**

We don't just do PSA, we do alpha fetoprotein, HEV4, CA59 and 125 and CDA. The reason is that for nine out of ten people, those proteins are not elevated, and then you get the one person where he's got several proteins that are elevated. We don't look at these protein indications as linear, like it's an account of how many cancer cells are active in the body. It's just another indication of a pathway that could be inflamed, that can be expressed by the cancer cells in that person's body. To make sure we're not missing something, we want to make sure that all the numbers are going down, not just two out of three or three out of five or something like that.

**Brian McCloskey 1:12:47**

You are looking at PSA as one of those. What is the correlation between the exercise regimen and a reduction in PSA or any of these other proteins? To qualify that a bit more, one of the challenges with prostate cancer is that it's a “cold” cancer. While we may be raising our immune

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cell activity, it won't do any good if those immune cells aren't actually killing the cancer. How does this exercise actually kill the cancer?

**"Dr. Tom" Incledon 1:13:34**

In some cases, within six weeks, there is a 50% or greater reduction in the total burden of cancer as assessed by a PET scan; in other cases, there is no impact at all. In those cases where there's no impact at all, what we usually see is there's an unusually high burden of environmental toxins in that person. If you were to look at the individual effects of those environmental toxins or chemicals, they literally say immunosuppressive, so then you're not going to see patients increasing above that 1800 level I mentioned earlier. How that impacts PSA is all over the place. It's not going to be a linear response. You have to think of **exercise, any exercise, is beneficial. Period. Whether that translates to a direct reduction, we'll just say it reduces the cancer burden in the body.** There are other factors that are involved. In some cases, we may know those factors very well. But in cases where people don't have the funding to afford the testing, and there's no financial assistance available for the lab to pay for the testing, we don't know what else is involved. There's not really a direct intervention that can be done because we don't know what we're dealing with. We do measure when we can see a decrease in environmental toxins over time. You have multiple variables that you're looking at over time. It's not a linear relationship. Unless there was a magic way that we could somehow get rid of everything that damages DNA, everything that suppresses the immune function, whether it's missing or too much – correct all those things, there definitely would be a much more linear relationship than what you see in some cases. That wasn't a direct answer, but it's just not that simple.

**Brian McCloskey 1:15:41**

I understand the complexity, it's just that for better or for worse, PSA is a marker that prostate cancer patients use as a proxy to understand growth and regression of cancer. It varies across all of our patients here. For example, I have a high tumor burden, but I have a low PSA. But still I know the relative amount of growth based upon increases in my PSA.

All of our patients here are on some type of therapy. Have you looked at certain types of treatments that improve or hurt the response to EWOT? For example, let's say I'm on chemotherapy, would chemotherapy plus EWOT be a good thing? We're using chemotherapy to potentially turn the cold tumor hot, you fire up your immune system through EWOT, and, bingo, maybe you've got a better solution. I'm obviously making this up. I'm curious if you've looked at treatments that patients are on, and those that seem to do better, based upon their treatment profile.

**"Dr. Tom" Incledon 1:17:09**

First, if someone has done the Tempus testing and mProbe proteomics testing, my general view is that those patients are more likely to get better results from getting a medication that's a

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better fit for what's going on inside their body. So you have that precision on a treatment recommendation from the chemotherapy, maybe immunotherapy, side. **In terms of those drugs, some are very immunosuppressive. Those drugs will reduce the immune responses to exercise. Period. It doesn't matter if it's EWOT or lifting weights.** But doing the exercise does help. Think of it as instead of you coming down to zero and staying at zero, over time, you're at least a little bit above that. It would depend on the drug. For example, we have a case right now where the white blood cell count would get to zero, and then the doctors would put the patient on Neulasta to stimulate the white cells back up. Once the Neulasta would kick in, the white blood cell counts would go sky high. In between the treatment and the chemo, we would see things normalize, and he would get a normal response to EWOT. There are times when if you're at zero, you're not going to get a very strong response, because there's nothing really there. So a lot of it depends on the type of medication that's used, but you would still want to continue exercising, because remember, there are a lot of benefits to exercise in general. And those benefits can be enhanced when you add in supplemental oxygen.

**Brian McCloskey** 1:19:09

You mentioned that you've done some work incorporating the microbiome. I think we might have talked about this a couple months ago, but are you working with Rob Knight's Cancer Center at UC San Diego and the microbiome work that he's doing? I'm curious if there might be some opportunity to collaborate there, maybe make it more accessible to folks on the West Coast?

**"Dr. Tom" Incledon** 1:19:43

I'm not collaborating with them. The lab we were using to handle the microbiome testing previously was Aperiomics. COVID was really hard on them, so they're no longer viable. We're now looking at another group, Cosmos ID, I think it's called. They're considered one of the largest microbiome analyst centers in the world. They're the back end for a lot of companies claiming to do microbiome testing, and they just take their samples and send it to those guys. That's where we're at right now.

If you want to set up an introductory email or something, I'd love the opportunity to talk with you.