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ADT Study Newsletter

Quality of Life and Exercise Research

We are excited to bring you our first newsletter for the exercise and bone health studies! Starting with this issue, we will keep you informed about the progress of our studies and any updates and findings from the studies. Thank you to everyone for participating!

This newsletter features a participant testimonial, abstracts and summaries from relevant studies, expert advice from a health psychologist (Dr. Andrew Matthew), and some practical healthy living tips that you can start implementing into your life.

Inside this issue

Research Updates

Bone Health Study

While ADT helps treat prostate cancer, it can lead to bone loss and increase the risk of fractures. The purpose of this research study is to compare the effectiveness of two educational strategies which could help prostate cancer patients on ADT to improve their bone health.

There are currently 90 study participants in the Bone Health Study, some of whom are receiving specialized written advice regarding bone health, and others who are getting specialized written advice and being contacted by a Bone Health Care Coordinator to provide expert advice on ideal bone health care.

Exercise Study

The purpose of this research study is to evaluate the effectiveness of 3 types of exercise program delivery methods for prostate cancer patients on ADT to determine which program type is most effective and feasible.

There are currently 7 participants undergoing a home-based exercise protocol, 8 participants who are receiving personal training and 8 participants partaking in the group exercise class.

Patients are still being recruited for both studies. Our aim is to recruit a total of 100 participants for each clinical trial.

If you have any suggestions or would like to contribute, please email Henriette at hbreunis@uhnresearch.ca or Sara at sara.durbano@uhn.ca. We take pleasure in hearing from you!

We would like to thank Prostate Cancer Canada for graciously sponsoring the Exercise study.

"The Exercise Study Saved Me!"

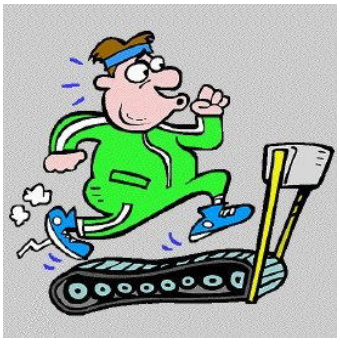
It was a bleak Thursday and I was sitting in the waiting area, about to go into my radiation marking session at Princess Margaret Cancer Centre. I was feeling sorry for myself, totally unmotivated, and physically unwell, as my prostate cancer treatment had left my body weak. First the surgery in August and now the start of 33 radiation sessions as well as 2 years of hormone therapy! Wow! I was in a bad place, both mentally and physically!

My body had lost almost all of its muscle tone, and I did not know what to do with myself. I had no strength, I had no breath control, I could not walk for long, going up stairs hurt me, and I just brooded more and more! I had been off work for 3 months after surgery, laying down at home and not doing anything physical. I had also stopped smoking, voluntarily I might add; this combination caused me to eat – wildly! i gained a whopping 24 lbs – unwanted pounds! Before surgery I had been a toned 180lbs with a 33" waist, a nice defined chest, and runner's legs. Now I was fat (in the stomach area only), weighed 204 lbs. and had a 36"+ waist. I was 62 but this weight gain, for me, was horrendous! I thought many times of going to a gym and seeing if I could do something to improve my body – but I was not sure how to go about doing this once I joined!

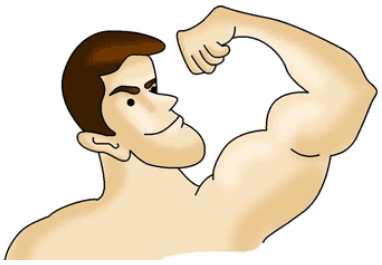
As I played my casino video game on my IPhone (yes that was to become my waiting room pastime) a young woman came up to me and asked if she could talk to me. Oh great, I thought! Just what I need today! Another volunteer trying to make me feel better!! But wait - no! She was a research student named Osai and she was connected to a study group. She wanted to know if I would be interested in joining an exercise study for men who had prostate cancer! Was this for real?? Did my guardian angel arrange this??

"Yes!" I shouted! "I am VERY interested!" Maybe I was overexcited and a bit loud because everyone around us snapped their heads in our direction! We laughed. She mentioned that this programme was to take place at the gym in the ELLICSR at Toronto General. Sessions would occur three times a week and I would be randomly assigned to a personal trainer, group program, or exercise at home with guidance. I got the personal trainer! My excitement mounted!!

Before I could start the programme I had to go through an evaluation and a lengthy questionnaire. I arrived at the beautifully appointed ELLICSR in the basement of Toronto General and was taken into an examination room. Who invented this test anyways! It was a standard stress test apparently, on a treadmill with a rather large tube in my mouth to capture my "exhaust" gases. A most uncomfortable test as it was difficult to breathe but I did the best I could before I had to stop the test. I was scared I did not do well enough to get



into the programme. All I could think about was the fact that I might have blown my one shot at getting help through exercise!! That is all I could think about! But no, it was not about measuring how well you could do but rather what you could do. I was given my first appointment! Hurray!



So the day came and I met my personal trainer – Sara. I was excited but extremely nervous. Here I was - about to do exercise that would help my body get back into shape!! We started by doing cardiovascular exercise on the bike for 20 minutes or so. Some days Sara was not there and Meagan took over. On other days Holly (a kinesiology student) would lead the session while Meagan or Sara supervised. No matter who was there I had a great workout! Everything was difficult! I got tired easily! My muscles ached! This was harder than I thought it was going to be. I could do most of the exercises but found we had to adapt others. This was awesome!!! I actually looked forward to my sessions at the gym and would not let anything interfere with my appointments! By week two I actually started feeling muscles! Really? Yes I was feeling better physically and mentally as well – they go hand in hand I found out! The programme was starting to get my muscle mass back! Each and every week there was an improvement!

I travel to the hospital by subway from my workplace. At first climbing the stairs in the subway to the street level was very difficult. I had to stop 2 or 3 times. It is now 3 months later and I can almost run up the stairs! My leg muscles are starting to look like leg muscles and my arms actually have a noticeable mass!! But more than that I FEEL BETTER! My outlook on life has improved dramatically. I want to be alive and enjoy! I enjoy social activities again! Wow, I am almost back to a normal life and feeling 250% better. Sure, time fixes all they say but without the exercise programme I would definitely not be feeling as I do. Every Thursday while doing radiation I would meet Dr. Catton or another member of his team and they would always ask me how I was feeling. Every time I would say the gym sessions I had 3 times a week at ELLICSR are making me feel better! By the time I finished my 33 radiation sessions a few weeks ago the doctors and nurses in his office all mentioned how much better generally I looked! They even noticed my biceps!

The programme is doing its magical work! I love it and look forward to my sessions! The gym should be a requirement for any man who is undergoing treatment for prostate cancer and especially who is also undergoing hormone treatment! I was feeling miserable and sorry for myself and not really interested in life - now - I feel alive!!

If only I could stop the hot flashes and get my fluctuating emotions under control!

We would like to thank the Canadian Cancer Society Research Institute for graciously sponsoring the Bone Health study.

Canadian Cancer Society Société canadienne du cancer
Research Institute

Rock C.L. [et. al.]. 2012. Nutrition and physical activity guidelines for cancer survivors. Cancer J. Clin. 62(1):30-67.

In 2012, the American Cancer Society (ACS) organized a group of experts in nutrition, physical activity, and cancer survivorship to find the optimal nutrition and physical activity practices for patients who have been diagnosed with cancer.

Some of the key recommendations given in the report are summarized below:

- Try to maintain a healthy body weight. If you are overweight or obese, try to engage in more physical activity and limit your consumption of high calorie foods
- Aim to engage in 150 minutes of light or moderate physical activity each week (eg walking, swimming, cycling)
- Include strength training (resistance) exercises into your daily routine at least two times per week
- When choosing carbohydrates, try to choose whole grain options (eg. brown rice, quinoa)

The guidelines outlined in this report are consistent with the recommendations given by the Princess Margaret Prostate Center in their prostate cancer survivorship guide (see page 6). To access the full report of the ACS guidelines, visit http://onlinelibrary.wiley.com/doi/10.3322/caac.21142/pdf.

"The secret to change is to focus all of your energy, not on fighting the old, but on building the new"

-Socrates

Exercise Tip: Kegel Exercises

A great exercise that prostate cancer patients can do during and after their treatment is the **Kegel exercise**. These movements strengthen the muscles of the pelvic floor and can help patients to maintain or improve their urinary control.

The first step in performing Kegel exercises is to identify your pelvic floor muscles. In order to do this, try to stop the flow of urine while urinating; the muscles that you use for this contraction are your pelvic floor muscles. Performing a Kegel exercise involves contracting this muscle. You can perform these contractions anytime during the day. The Princess Margaret guidelines recommend aiming for 80-100 contractions during the course of each day; however, you can always start with a few contractions and work your way up as you feel more comfortable with the exercise.

This simple exercise can go a long way in helping you to prevent leakage following prostate cancer treatment.

Androgen Deprivation Therapy, Depression and Exercise

Dr. Andrew Matthew, Health Psychologist and Exercise Study Co-Investigator

There is little doubt that Androgen Deprivation Therapy (ADT), commonly known as hormone therapy, represents a significant development in the treatment of prostate cancer (PC). However, ADT is also associated with a variety of side effects. The challenge confronting patients and their healthcare providers is to work as a team in managing the side-effects experienced. If this is done effectively, the patient can benefit from the life-extending effects of ADT while enjoying a good quality of life.

In recent years, there has been a lot of research on the prevalence and management of the physical side-effects of ADT. This is less true for psychological side-effects. Simply put, our understanding of the impact of ADT on psychological well-being is in its infancy. There is some evidence of increased depression in this patient population and it is not uncommon to read in the lay literature about a direct relationship between ADT and depression. In fact, however, it has not clearly been shown that ADT directly causes depression. Furthermore, it is also important to note that depression associated with ADT does not typically respond to anti-depressant medications. It is probably more useful to explain patient experience through the global impact of ADT. Common inter-related symptoms in cancer patients on ADT include: fatigue, sleep disturbance, loss (e.g. sexual dysfunction and loss of libido), and low self-body image perception. Combined, these side-effects can result in patients experiencing decreases in interest and motivation. Given that low energy, insomnia, and loss of interest/motivation are diagnostic criteria for depression, it is reasonable to see how the constellation of ADT symptoms mimics depression. Said another way, the mainly physical effects of ADT may underlie a patient's emotional experience of depression. Practically speaking, this may be good news because if we can target physical symptoms with interventions we may be able to improve patient psychological well-being.

This brings us to the importance of exercise or regular physical activity in reducing feelings of depression while on ADT. There is strong scientific evidence that exercise benefits most of the physical symptoms of ADT, which in turn, will reduce a patient's vulnerability to depression. Through extensive research in patients with cancer, including men on ADT, exercise has been shown to reduce fatigue and increase energy. Similarly, exercise is the obvious treatment of choice to deal with changes in body composition and appearance (i.e. gynecomastia, weight gain, loss of muscle mass and tone) from ADT. There is even some recent evidence that exercise may positively influence sexual functioning in patients treated for prostate cancer. In the literature not specific to cancer populations, exercise has also been shown to improve sleep and elevate mood. Finally, and importantly, exercise can help patients regain a sense of control over their physical and psychological well-being.

As a result, health care professionals should consider 'prescribing' an exercise regimen to patients starting ADT treatment (comparable to exercise rehabilitation for cardiac patients). Similarly, patients should consider engaging in an exercise regimen that they can keep up with over time. A note of caution: it is recommended that patients consult with their treating physician before initiating any exercise program. As well, patients experiencing persistent or increasing depressive symptoms should seek advice from a mental health professional, because under these conditions, anti-depressant medications and psychotherapy may be helpful.

Overall, I expect that patients starting on ADT today will live long enough to see continued advancements in prostate cancer treatment. The challenge is to enjoy a good quality of life while on ADT. Exercise has the potential to meet this challenge and offer patients the opportunity to reach a desirable quality of life.

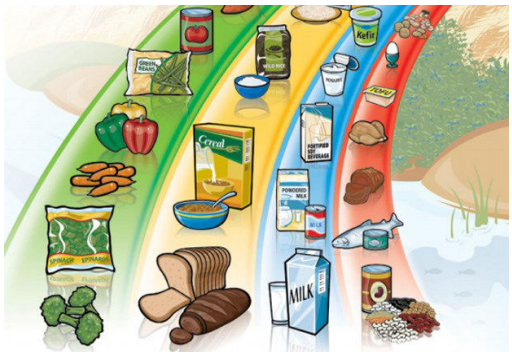
A complete list of nutrition and physical activity tips for prostate cancer recovery is available at http://www.prostatecentre.ca/images/downloads/challenging_prostate_cancer.pdf.

Alibhai S.M. [et. al.] Changes in bone mineral density in men starting androgen deprivation therapy and the protective role of vitamin D. 2013 March, 24 (10):2571-9.

Nutrition tips from the Princess Margaret Prostate Center

Diet and nutrition have gained much attention due to their beneficial properties in the prevention and treatment in many illnesses, including prostate cancer. The Princess Margaret Prostate Center has suggested some dietary changes that may help boost quality of life in prostate cancer patients. Some of their major findings from the report are summarized below:

1. Have a well balanced diet. Health Canada recommends that your average daily intake consists of 20-35% Fats, 10-35% Proteins, and 45-65% Carbohydrates.
2. When eating fats, it is important to decrease your saturated fats (e.g. meat and dairy) and consume more unsaturated fats (e.g. avocados, nuts, fish, vegetable oils).
3. Incorporate plenty of fruits and vegetables into your diet; these will give you many of the nutritional benefits that you need to fight off the cancer.



"I'm not telling you it's going to be easy, I'm telling you it's going to be worth it"

-Art Williams

A recent study at Princess Margaret examined the role that androgen deprivation therapy (ADT) has on bone mineral density (BMD). Decreased BMD is a common side effect of ADT, leading to increased risk of fractures. Men aged 50+ with nonmetastatic prostate cancer starting continuous ADT were enrolled in a study over the course of three years. A total of 80 ADT users and 80 controls were enrolled in the study (mean age 69 years); 52.5 % had osteopenia and 8.1 % had osteoporosis at baseline. The results demonstrated that the loss of BMD associated with ADT is greatest at the lumbar spine and in the first year. The BMD changes in year 2 and 3 were much smaller and not statistically different from the control group. Additionally, the data revealed that vitamin D, but not calcium, may help to protect against BMD losses, particularly in the first year of ADT use.

The lived experience of physically active older prostate cancer survivors on androgen deprivation therapy

A recent study was conducted to analyze the lived experiences of prostate cancer patients on androgen deprivation therapy (ADT) who exercise individually. The study followed the experiences of three older men (74–88 years old) with prostate cancer, using ADT continuously for at least 12 months and engaging in regular physical activity for a minimum of 6 months. Individual semi-structured interviews, audio recorded and transcribed verbatim were all used to collect data**.** Three common themes emerged through analysis of the participants' stories; Getting started, having a routine and being with music. The results indicate what drew the participants to continue to exercise regularly despite the challenges associated with their cancer and treatments. This study sheds light on the benefits of, and what it means for, older men with prostate cancer to regularly exercise individually. These findings may assist cancer physicians and other healthcare professionals to be more attuned to prostate cancer survivors' lived experiences when undergoing ADT, allowing clinicians to better promote regular exercise to their patients as a foundational component of living well.

Wright-St Clair V.A., Malcolm W. and Keogh J.W. Aging Male, 2014 March 17(1):57-62.

Healthy Bones Study/Bone Prescription Study

Purpose: To promote healthy bone behaviours among prostate cancer patients receiving androgen deprivation therapy (ADT, also known as "hormone therapy"), thereby reducing risk of fractures.
Background: ADT is often used for prostate cancer patients as part of their treatment. However, ADT does cause some side effects, including bone loss and a risk of developing osteoporosis. There are medical guidelines that recommend lifestyle changes, calcium and vitamin D supplementation, and regular bone mineral density monitoring. Some of these lifestyle changes include weight-bearing exercise, stopping smoking, and caffeine & alcohol moderation. However, prior studies have shown that many patients are not aware of the side effects of ADT, and are unaware of ways to reduce their risk of developing osteoporosis while receiving ADT.
Objectives: This pilot study is designed to test the implementation of a "BoneRx" or bone prescription to improve awareness of healthy bone behaviours among clinicians and patients. The study will measure patients' levels of calcium and vitamin D intake, as well as physical exercise, both before and after implementation of the BoneRx. Finally, the study will assess patient knowledge and beliefs about bone health and clinician attitudes towards the BoneRx.
Methods: This is a pilot trial involving one hospital (Princess Margaret) using a before/after design. Patients enrolled early in the trial (phase 1) will receive usual care, whereas patients enrolled later in the trial (phase 2) will receive the BoneRx prescription. A total of 200 prostate cancer patients followed by a radiation oncologist or urologist at Princess Margaret Cancer Centre and having received ADT for 12 months or less will be included in this study.
Current status: This study is active with ongoing patient recruitment and data collection. As of June 2014, 160 of 200 men have been recruited; phase 1 has been completed and preparations are being made for phase 2 of the study.

Study investigators: Dr D Tsang, Dr J Jones, Dr C Catton, Dr S Alibhai

Modulation of blood flow, hypoxia, and vascular function in orthotopic prostate tumours during exercise

Background Previous studies have hypothesized that the amount of blood going through tumours may be elevated or reduced during exercise, which could impact the environment within a tumour. However, to date, tumour blood flow has not been measured during exercise due to technical limitations. This study tested the hypotheses that during exercise, tumours would experience 1) enhanced blood flow, 2) increased numbers of open blood vessels, and 3) increased tissue oxygen supply and, furthermore, that the increased blood flow within a tumour would be associated with reduced blood vessel narrowing in the prostate tumour.

Methods Tumour cells were injected into the prostate of male rats aged 4 to 6 months randomly assigned to tumour or control groups. Prostate tumour blood flow, vascular resistance, number of open blood vessels, and hypoxia (oxygen deficiency) were measured in rats at rest and during treadmill exercise.

Results During exercise there was a significant increase in tumour blood flow (approximately 200%), tissue oxygen supply and number of open blood vessels as compared to measurements made at rest.

Conclusions: During exercise there is an increase in the volume of blood going through tumours and the amount of available oxygen, in part due to reduced blood vessel narrowing. The clinical relevance of these findings are that exercise may enhance the delivery of tumour-targeting drugs (eg. chemotherapy) as well as increase tumour oxygen-availability, which may reduce tumour aggressiveness.

McCullough DJ[1], Stabley JN, Siemann DW and Behnke BJ. J Natl Cancer Inst. 2014 Apr;106(4):36-43.

We are excited to announce the creation of a website for our Exercise Study! You can now have easy access to all of the latest study updates, meet the study team, get links to useful resources on our website and much more! To access the website, visit www.adtexercisetrial.ca. If you'd like to support us and our research in prostate cancer, please visit our website and click on the 'Support Us' link.

Meet the Team

We are very fortunate to have a very talented team working with us on both the Exercise and Bone Health studies. The principal investigator for both studies is **Dr. Shabbir Alibhai**. **Henriette Breunis** and **Sara Durbano** are the research coordinators for the Bone Health and Exercise trials, respectively. **Darren Au** and **Clifford Taylor** are working as outcome assessors for the exercise trials and **Meagan O'Neill** is the research assistant for the study. Lastly, **Mustafa Mohamedali** is a research student working on the exercise trial. We will tell you more about them and other team members in future issues.