EXERCISE & *Cancer*

An eBook by

ESSA
Exercise & Sports Science Australia

FOREWORD

ASSOCIATE PROFESSOR PRUE CORMIE

Every four minutes an Australian is diagnosed with cancer. Cancer can have a devastating effect on people's lives – not just their physical and mental health, but also their family, work and social life.

An extensive and growing body of scientific research has established exercise as a particularly potent medicine for the management of cancer. In fact, the science suggests that exercise is one of the best medicines people with cancer can take in addition to their cancer treatments. That's because people who exercise regularly following a cancer diagnosis experience fewer and less severe side effects. Emerging research also suggests that exercise may help lower the relative risk of a cancer recurrence and cancer-related death for people diagnosed with some cancers (most of the research has been conducted with breast, colorectal and prostate cancer patients).

Based on the level of evidence available, leading national and international cancer organisations recommend people with cancer adhere with evidence-based guidelines. Importantly, these guidelines specify that exercise should be individually tailored to each cancer patient based on an extensive range of factors including, but not limited to: their cancer type, stage and prognosis; treatment history, current and upcoming treatments; symptoms and side-effects of the disease and its treatment; current health status and physical abilities; and patient goals.

Accredited Exercise Physiologists are the most appropriate health professionals to individually tailor the exercise prescription, education and advice required to maximise the safety and effectiveness of exercise for people with cancer. Furthermore, the peak professional organisation representing all health care professionals involved in the care of people with cancer (Clinical Oncology Society of Australia) has identified that best practice cancer care incorporates a referral to Accredited Exercise Physiologists with experience in cancer care.

This eBook provides an overview of the critical role Accredited Exercise Physiologists play in the care team of people with cancer.

Associate Professor Prue Cormie is an Accredited Exercise Physiologists whose research and clinical work focuses on the application of exercise as medicine for the management of cancer. She is a Principal Research Fellow in Exercise Oncology, Founder of the not-for-profit organisation EX-MED Cancer, and Chair of the Clinical Oncology Society of Australia Exercise and Cancer Group.


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WHO IS ESSA?

Exercise & Sports Science Australia (ESSA) is the nation's leading voice on exercise and sports science. We govern and represent approximately 10,000 degree-qualified professionals who support Australians to reach their health and performance goals.

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CONTENTS

CANCER IN AUSTRALIA

Cancer is a term used for diseases in which some of the body's cells divide without stopping and invade nearby tissues. Cancer cells can also spread to other parts of the body through the blood and lymphatic system.

According to the Australian Institute of Health and Welfare's 'Cancer in Australia 2019' report, cancer is a major cause of illness in Australia.

With 1 in 2 Australian men and women being diagnosed with cancer by the age of 85, there's over 1 million people alive in Australia who are either living with or have had or been previously diagnosed with cancer.

Each day in 2019, 396 people will be diagnosed with cancer and 137 will die because of cancer, making cancer a leading cause of death in Australia.

Prostate cancer is the most commonly diagnosed cancer in males (19,508 cases), with an estimated 1 in 6 risk of diagnosis before the age of 85. For females, breast cancer is the most commonly diagnosed cancer (19,371 cases, risk before age 85 of 1 in 7). For both sexes, colorectal cancer is the second most common cancer, followed by melanoma of the skin and lung cancer.

CANCER RATES HAVE IMPROVED OVER TIME

Around 30 years ago, about 5 in 10 people survived for at least 5 years after their cancer diagnosis. More recent figures now show that about 7 in 10 people will live longer than 5 years post-diagnosis. Understanding and avoiding the risk factors associated with cancer can help to reduce the chance of getting cancer. In addition, participating in cancer screening programs can increase the likelihood of detecting cancer early, enabling better outcomes from treatments. Improvements in treatments and care are also important contributors to improvements in survival.

THE ROLE OF PHYSICAL ACTIVITY IN CANCER PREVENTION

Exercise is widely accepted as important for maintaining good health, reducing the risk of chronic disease, and aiding rehabilitation from disease. Physical activity decreases the risk of developing many cancers including our common cancers.

Exercise is Medicine® Australia highlights that the benefits of exercise (both pre- and post-diagnosis) are associated with positive cancer outcomes – function, fitness, quality of life. There is also a growing body of evidence that indicates exercise after diagnosis may improve long-term survival rates, at least in breast and colorectal cancer.

Source: *Australian Institute of Health and Welfare*
Source: *Exercise is Medicine® Australia*

WHY EXERCISE IS IMPORTANT

First of all, what's the difference between exercise and physical activity?

Physical activity is movement that is carried out by the muscles that requires energy. In other words, any movement one does is actually physical activity. **Exercise** is planned, structured, repetitive and purposeful movement intended to improve or maintain physical fitness.

Ongoing research has shown strong evidence that exercise plays an important role in the prevention of cancer and is a safe and effective strategy to counteract many of the negative physical and psychological effects of cancer and its treatment.

The benefits of exercise for people with cancer include:

- Improved muscle strength and fitness;
- Improved physical function to help with everyday activities;
- Improved immune function;
- Improved chemotherapy completion rates;
- Improved mood and self-esteem;
- Reduced hospitalisation duration;
- Reduced psychological and emotional stress, including depression and anxiety;
- Reduced number and severity of symptoms and side effects reported (e.g., pain, fatigue, nausea); and
- Reduced chance of developing new cancers and other diseases such as cardiovascular disease, diabetes and osteoporosis.

WHAT ARE THE EXERCISE GUIDELINES FOR HEALTHY AUSTRALIANS?

The Australian guidelines for physical activity recommend the following:

- Accumulate 150 to 300 minutes (2 ½ to 5 hours) of moderate intensity physical activity weekly;
- Be active on most, preferably all, days every week;
- Undertake muscle strengthening activities on at least 2 days each week;
- Minimise the amount of time spent in prolonged sitting; and
- Break up long periods of sitting as often as possible.

EXERCISE GUIDELINES FOR PEOPLE WITH CANCER

The 2019 ESSA 'Exercise medicine in cancer management' position statement encourages cancer patients to be guided through an individualised exercise prescription that is specific to them, their cancer and their needs. Targeted exercise prescription, which includes behaviour change advice and support, is needed to ensure the greatest benefit for the patient is achieved, with very low risk of harm.

The exercise prescription that works best is then determined by a variety of factors including patient assessment, identification and consideration of general and cancer-specific health issues and their contribution to quality of life, and other patient-driven goals.

While for the majority, an assortment of exercises (consisting of aerobic and resistance exercise) of moderate to high intensity will be appropriate, there is no set prescription and total weekly dosage that would be considered consistent across **all** cancer patients.

It's important to remember that it's not a "one size fits all" approach. Appropriate exercise prescription for those living with cancer needs to be targeted and individualised by an exercise professional according to patient- and cancer-specific considerations. Remember that sometimes a seemingly 'easy' activity, for example walking for 10 minutes, might *feel* like moderate intensity during treatment, so it's important to exercise at an intensity that feels right.

TIP:

HOW CAN I IDENTIFY THE INTENSITY OF THE EXERCISE I AM COMPLETING?

A quick way to test your exercise intensity is using the **talk test**. When exercising can you:

- Talk comfortably and sing comfortably? You're probably exercising at a **light intensity.**
- Talk comfortably but not sing? This is likely to be **moderate intensity** exercise.
- Neither talk nor sign comfortably? You're working hard at a **vigorous/high intensity.**

IT'S IMPORTANT TO REMEMBER THAT IT'S NOT A "ONE SIZE FITS ALL" APPROACH.

WHO ARE THE EXERCISE PROFESSIONALS?

Accredited Exercise Physiologists - also known as AEPs - complete a minimum 4 years of study at university in order to specialise in prescribing and supervising exercise for people who have complex health conditions, such as cancer. As exercise specialists, AEPs have the knowledge and skills to design, deliver and evaluate safe exercise programs, and make for a key member of any cancer care team.

The ESSA consensus statement on the role of AEPs in the treatment of cancer notes that an AEP who has experience working with people with cancer will be able to confidently:

- Understand cancer diagnosis, staging and treatments;
- Understand the phases of cancer care from diagnosis through to end-of-life;
- Understand the symptoms and side effects of cancer and cancer treatments;
- Understand how cancer and its treatment may influence one's ability to exercise;
- Use clinical skills to review one's health status before starting exercise;
- Understand cancer-specific issues that need to be considered to ensure exercise is safe and suitable;
- Use evidence-based practice to develop targeted exercise prescriptions which have been individualised;
- Use appropriately selected types of exercise, intensities (i.e. How hard) and volumes (i.e. How much) throughout one's treatment and recovery;
- Maximise the safety and benefits of exercise even if one is going through difficult treatments or dealing with cancer treatment-related side effects; and
- Provide cancer-specific exercise education, advice and support to help improve overall health and well-being through regular exercise.

WHAT TO EXPECT WHEN SEEING AN ACCREDITED EXERCISE PHYSIOLOGIST

It all starts with the initial consultation. An AEP will ask about:

- The patient's experience with cancer, including diagnosis and treatment (completed, current and planned);
- Side effects of the respective treatment that has been undertaken;
- Current movement and overall fitness capacity;
- Previous injury history; and
- Any exercise goals.

The AEP uses this information to build a program that is safe, effective and individualised to the patient. An exercise prescription will then be adapted based on many factors, including:

- **Response to exercise** – the AEP will track things like heart rate, blood pressure and rating of perceived exhaustion (RPE) to understand the body's response to exercise.

- **Symptoms** – the AEP will consider and accommodate any treatment-associated symptoms such as cancer-related fatigue, urinary incontinence or bone pain in the prescription of exercise.
- **Treatment cycles** – the AEP will also work with the patient to understand when to reduce or increase exercise load to accommodate any circumstances while also achieving their longer term exercise goal.

HOW MUCH DOES IT COST TO SEE AN ACCREDITED EXERCISE PHYSIOLOGIST?

The costs of AEP services vary between providers. Financial support is available for people with cancer which allow for these services to be accessed at a relatively low cost, or in some cases, at no cost. Financial support may be available through the following:

- A Medicare Chronic Disease Management (CDM) Plan prepared by a GP can provide rebates for up to 5 sessions per year (10 for an Aboriginal and/or Torres Strait Islander person).
- Department of Veterans' Affairs provides various subsidies for entitled clients through appropriate referral by a GP (requires a valid D904 referral form).
- Private Health Insurance providers offer various subsidies for individual and group-based AEP services which vary depending on the insurer and level of coverage.
- Other financial subsidies may be available to people with cancer through local government funded initiatives, research programs, private companies, life insurers, cancer organisations and the National Disability Insurance Scheme.

TIP:

HOW CAN I FIND AN ACCREDITED EXERCISE PHYSIOLOGIST?

Currently there are over 5,000 AEPs throughout Australia and your cancer care team will be able to recommend AEPs who specialise in cancer. You can find one close to your home by looking at the online directory provided by the accreditation body for AEPs, Exercise & Sports Science Australia (ESSA): www.essa.org.au/find-aep.

A referral from a health professional is not needed to see an AEP but you may be referred by a member of your cancer care team (e.g., oncologist, surgeon, nurse, etc.), your general practitioner or a cancer agency/organisation (e.g., Cancer Council). Any person with cancer, their family or friends can directly contact an AEP to make an appointment.

BENEFITS OF EXERCISE DURING CANCER RECOVERY

Exercise may feel like the last thing someone wants to do during cancer recovery, but research shows it could make all the difference by helping to boost energy levels, minimise side effects and even enhance the recovery process.

While this may sound counterintuitive, exercise reduces cancer-related fatigue. People may experience fatigue at any time from diagnosis through to treatment, and some people experience it even months after treatment has finished. The experience of fatigue can vary from day-to-day and from week-to-week, and therefore activity levels may need to be adjusted around fluctuating fatigue. Exercise has been found to conclusively reduce cancer-related fatigue both during and after cancer treatment.

Exercise minimises the effects of other cancer treatment-related side effects. Fatigue isn't the only side effect that can be improved through exercise. As well as the list of benefits on page 7, research shows that exercise during and following cancer treatment can:

- Reduce the risk of long-term heart problems after radiation therapy and/or chemotherapy);
- Minimise loss of bone strength;
- Reduce the risk of developing lymphedema;
- Improve anaemia (a red-blood cell deficiency); and
- Enhance quality of life.

Exercise post-diagnosis may also influence risk of recurrence and death. Not only does the WHO (World Health Organisation) say exercise reduces cancer mortality, new research also suggests exercise may lower the risk of recurrence among people with cancer.

WHAT TYPE OF EXERCISE AND HOW MUCH?

Everyone is different when it comes to exercise prescription and depending on the type of cancer and the current cancer treatment cycle, exercise should be tailored accordingly.

In general, the ESSA 'Exercise medicine in cancer management' position statement says every person with cancer should aim to complete at least moderate intensity exercise, unless they have certain risk factors.

These special factors include but aren't limited to:

- Surgery for cancer in the past few weeks;
- Individual medical factors such as periods of very low immunity or increased bleeding risk such as a low blood platelet count; and/or
- Nausea related to higher intensity activity.

Even if someone has any of the above factors, exercise is still possible. However, it needs to be tailored to minimise any risks. This is where an Accredited Exercise Physiologist with experience in cancer will be best placed to work with someone living with cancer.

The ESSA position statement on exercise in cancer care concludes that there is no set prescription or amount of exercise that would be seen as evidence-based for all cancer patients. Most exercise programs will include a mix of aerobic and resistance type exercises, and each session should be adjusted based on how the person is feeling on certain days.

Aerobic exercise. Aerobic exercise is any activity that gets the heart beating faster and includes everything from walking to working out on the elliptical machine and dancing. If 20 continuous minutes or more can be reached, then it's recommended to aim for exercise on most days of the week. If it is a struggle to get to 20 minutes, then it's recommended to break exercise up into manageable chunks but to still aim for some exercise *every* day of the week.

Resistance exercise. Resistance exercise, or strength training, aims to increase the size and load capacity of muscles, and includes everything from body weight exercises like squats, through to dumbbells, exercise bands and machine weight exercises.

Resistance exercise should be performed at least twice per week, with usually at least 48 hours of recovery before exercising the same muscle group again.

EXERCISE WORKS BEST IN CONJUNCTION WITH SOCIAL SUPPORT

We know exercise can make you feel happy, help minimise treatment-related side effects, and improve treatment outcomes, but it can be hard to get started. It's important to stay motivated, and supportive people can make all the difference.

WHY YOU SHOULD SEE AN ACCREDITED EXERCISE PHYSIOLOGIST

Everyone's treatment program and background is different, which means the exercise program needs to be unique as well. The very best way to know what type of exercise to do is to work with an Accredited Exercise Physiologist, as they're the experts in exercise prescription.

An Accredited Exercise Physiologist will provide support, will help provide understanding as to what kind of exercise is best, and will motivate and oversee any progress throughout the recovery journey. They act like a personal cheerleader with all the knowledge needed to help someone achieve all their fitness goals.

Expert Contributor: *Michael Marthick, Accredited Exercise Physiologist and Managing Director, Care Connected.*


FATIGUE ISN'T THE ONLY SIDE EFFECT THAT CAN BE IMPROVED THROUGH EXERCISE.

EXERCISE & BRAIN CANCER

A brain tumour is a mass of unnecessary and abnormal cells growing in the brain. Brain cancer is a brain tumour that is malignant. There are many types of brain cancers, but the common types include medulloblastomas, astrocytomas, oligodendrogliomas, glioblastomas and mixed gliomas.

People can be diagnosed with primary brain tumours, which start in the brain and almost never spread elsewhere in the body, or metastatic brain tumours, which is caused by cancer that starts elsewhere in the body and spreads to the brain. This chapter will focus on primary brain cancer.

Although everyone's treatment and experience with brain cancer may be different, common treatments for brain cancer may include surgery, radiotherapy, oral or intravenous chemotherapy, corticosteroids, and anti-seizure medication.

WHY IS EXERCISE IMPORTANT?

Brain cancer and its treatment can cause significant side effects affecting people physically, cognitively and emotionally. These important changes caused by different treatments can affect how people function and how they complete their day-to-day activities. Some studies (1,2) have shown that cardiovascular fitness and muscular strength decrease during treatment for brain cancer, but exercise during treatment can prevent some of these declines: resistance training is helpful for bone and muscle health, whilst aerobic activity is helpful for improving cardiovascular fitness.

Another common side effect of treatment is fatigue, which can fluctuate during and after treatment. Exercise during treatment in particular, can be very helpful to manage fatigue. Following treatment, balance, aerobic and resistance exercise can help patients regain some of the function lost during treatment and improve overall function.

TYPES OF EXERCISE RECOMMENDED

There are no exercise guidelines specifically for people with brain cancer and the evidence for exercise in this specific cancer group needs to be developed further. However, below are some examples of practical advice that can be adapted for each individual living with brain cancer and their circumstances.

It is common for the amount of exercise or physical activity undertaken to change during and after treatment. During treatment, it is likely that the presence of symptoms will interfere with how much exercise one can do and maybe even what type of exercise can be done. The important thing to remember is to 'keep moving' and to do something enjoyable.

Exercise should include aerobic (cardiovascular) and resistance (strength-based) activity at a moderate intensity (or higher) during and after treatment. If someone is just starting to exercise or hasn't exercised in a while, it's recommended to start by doing something they know they can do (e.g., walking or using a stationary bike) at moderate intensity for 10-15 minutes (or less if unable to last for this duration at a moderate intensity). Then they can progress gradually from there by slowly increasing duration (e.g., if previous session was 'easy' increase next session by 5 minutes) and/or intensity.

There is also the option to break up activities into shorter blocks. This is particularly helpful when someone is struggling with fatigue. For example, instead of walking for 30 minutes in one session – this could be broken up into 3 sessions, each lasting 10 minutes duration.

The general recommendations are to do 2-3 sessions per week of resistance training. Depending on one's level of function, it's best to start with body weight exercises or light exercise bands, and progress to more challenging exercises using weights.

IMPORTANT THINGS TO REMEMBER

Corticosteroids (e.g., dexamethasone). Some people are prescribed steroids during their treatment to manage brain swelling. Some side effects of steroids include weight gain, changes in bone density, muscle strength and mood. Exercise may help to prevent weight gain and will help keep bones and muscles strong while taking this treatment. Both aerobic and resistance exercise are important.

Balance and neurological deficits. Depending on the area of the brain that is affected and what treatment has been given, some people experience problems with balance, speech, movement or seizures. Balance exercises like standing on one leg or walking may be helpful in preventing falls.

It is important to exercise in a "safe" environment. If there is difficulty with movement or balance, care needs to be taken when completing balance exercise – this should always be done either supervised and in a safe environment (e.g., having a chair as support). Safety should also be monitored when exercising outdoors – making sure the footpath is in good condition to avoid any trips is a good example. Choosing to exercise with someone may be helpful if one is feeling "wobbly" on their feet.

During treatment. People find that as they progress through their treatment cycle, their symptoms may fluctuate. It's ok to reduce exercise when symptoms are 'flared'. Similarly, exercise activities should be gradually increased when feeling a bit better.

Speak to an exercise expert. Accredited Exercise Physiologists (AEP) can be a wonderful help to get started with exercise or to ensure safety after a brain cancer diagnosis. AEPs will ensure the exercise is safe and can help provide an understanding on how to achieve exercise goals while accommodating functional ability and fluctuating side effects.

Expert Contributor: *Carolina Sandler, Accredited Exercise Physiologist, Lecturer, Queensland University of Technology.*

TESTIMONIAL

Angela was diagnosed with Stage 3 brain cancer at 45. After recovering from her initial surgery and radiation, she knew that her health needed to become a top priority again. Angela undertook a clinical trial which included an 18-week personalised exercise program with an Accredited Exercise Physiologist. The aim was to increase Angela's overall muscle mass, to improve core strength and balance (which the tumour and treatment had impacted on), and to set up habits which would strengthen her overall health and immune system.

Since finishing the trial, Angela has continued to exercise. Besides noticing physical improvements, she has also experienced less intense and less frequent "knock-out" fatigue and feels like she is able to better cope with the emotional pain and anxiety of being diagnosed with cancer. All of this has had a roll-on impact with Angela's family and the quality of her life and has now become a main motivator for her to exercise.

Angela explained that her cancer diagnosis has been life-changing, but not all in a bad way. She knows now that looking after herself physically, mentally and emotionally through regular exercise has significantly improved the quality of her life and her relationships.

EXERCISE & BREAST CANCER

Breast cancer is the most common cancer for Australian women and can occur in men, although this is rare. Thanks to advances in treatment, survival rates for those with breast cancer have increased significantly over the past two decades. Today, five-year survival rates exceed 90%.

BENEFITS OF EXERCISE

The impact of side effects from breast cancer treatment have been likened to rapid ageing. For example, 12 weeks of chemotherapy may lead to similar declines in cardiovascular fitness as can be seen with a decade of ageing. The good news is exercise can not only stop this decline, but it can also lead to improvements in cardiovascular fitness.

In addition to positive benefits through exercise on fitness, exercise also helps counteract adverse effects from treatment (including surgery, chemotherapy, radiation, hormone therapy, and other) on muscle strength, bone and balance, and prevents and/or reduces the severity of treatment-related side effects such as fatigue and lymphoedema.

Exercise also improves mood and one's sense of control following breast cancer. Of particular importance, there is strong evidence that links physical activity with survival, whereby those who exercise regularly post-breast cancer are less likely to die from breast cancer and less likely for the breast cancer to come back.

EXERCISE AFTER SURGERY

There are various surgical procedures that a person might undergo throughout their treatment for breast cancer such as biopsy, lumpectomy, full mastectomy with or without removal of lymph nodes, breast implants, and different types of reconstruction. It is important to follow the post-surgical guidelines given by the surgeon to encourage optimal wound healing.

Post-operative exercises may include simple range of movement exercises. During this initial recovery phase, it is usually safe to perform aerobic exercises, such as walking and stationary cycling, but in some instances, one may be told to avoid sweating. An Accredited Exercise Physiologist (AEP) may also prescribe lower body strength and balance exercise once it is safe to do so.

Once cleared by a surgeon, usually 6 weeks post-operation, it is advised to continue to work on regaining arm range of movement, and to gradually build strength and cardiovascular fitness.

LYMPHEDEMA AND EXERCISE

Lymphedema can be a much-feared side effect of breast cancer surgery, particularly when lymph nodes have been removed. When prescribed correctly and gradually, exercise, even at high intensity, has been shown to improve lymphoedema-associated symptoms, without any negative effects on lymphedema. In fact, movement is an important management tool of lymphedema as the pump effect of the muscles, blood flow and pressure changes that come with breathing helps move the lymphatic fluid around. An Accredited Exercise Physiologist can help with this.

TYPES OF EXERCISE RECOMMENDED

Various modes of exercise provide different benefits to people with breast cancer:

- Aerobic exercise – benefits body composition, cardiovascular fitness and heart health.
- Resistance exercise – benefits body composition, strength and bone density.
- Balance exercise – improves balance and side effects of peripheral neuropathy (tingling, burning or numbness).
- Core strengthening – especially important if breast reconstruction involves the abdominal muscle.
- Range of movement/flexibility exercises – particularly for regaining arm and shoulder range of motion.

It is very important to seek the advice of an Accredited Exercise Physiologist if any of the following is present:

- Bone metastases;
- Lymphedema;
- PICC line (catheter); and/or
- Movement issues.

IMPORTANT THINGS TO REMEMBER

- Do not increase weight/loads too quickly. One should be guided by symptoms and how they feel after their last exercise session when progressing exercise over time.
- Avoid guarding behaviour, such as rounding shoulders and not moving the arm on the effected side. This can lead to shoulder impingement syndrome or frozen shoulder.
- Fatigue levels fluctuate, especially during treatment. Exercise to tolerance and monitor recovery.
- Stop exercising if symptoms of a heart problem develop; shortness of breath, chest pain, swelling in neck or ankles.
- If peripheral neuropathy is an issue, minimise tripping hazards.
- If unusual swelling develops (e.g., at the operation site, in the arm, shoulder, chest or breast), this should be discussed with a member of the cancer team or GP.
- Speak to an Accredited Exercise Physiologist. An Accredited Exercise Physiologist will perform a thorough assessment in order to prescribe the correct mode and intensity of exercise that is specific to the needs of the person and progress the exercise program in the most safe and effective way.

Expert Contributor: *Dale Ischia, Accredited Exercise Physiologist, Melbourne Exercise Physiology Group and Moving Beyond Cancer.*

TESTIMONIAL

Ellen is a 45-year-old mother of two teenage children and a lawyer with a supportive partner. She was diagnosed with a 30mm tumour in her breast which was removed by surgery and followed by chemotherapy, radiotherapy and hormone therapy.

While receiving chemotherapy she continued to work part time and felt totally exhausted. It was at this time that she came to see me. Her main concern was fatigue, poor concentration and some early symptoms of chemotherapy-induced peripheral neuropathy (CIPN).

After a full history and blood tests to exclude other causes of fatigue, I referred her to our Accredited Exercise Physiologist for a personalised exercise program to start during treatment and continue through radiotherapy and into survivorship. Exercise is recommended for cancer-related fatigue, CIPN and cognitive fog in breast cancer from the time of diagnosis.

Exercise improves function and empowers people to stay as well as possible during and beyond cancer therapy. It can also help reduce side effects from hormone therapy, including weight gain and joint pain.

A personalised exercise program for cancer patients has become one of our strongest recommendations with good evidence supporting its benefit in improving symptom management and recovery and reducing recurrence in some cancers. Exercise combined with improved diet, stress management and improved sleep had a profound impact on Ellen's fatigue and chemotherapy-related cognitive fog. It is now something I make sure is part of every medical assessment and medical prescription.

Testimonial provided by Associate Professor Judith Lacey, Head of Supportive Care, Chris O'Brien Lifehouse.


CHILDREN MUST BE ENCOURAGED TO MOVE AS MUCH AND AS OFTEN AS POSSIBLE.

EXERCISE & CHILDHOOD CANCER

Of 145,000 cancers diagnosed in Australia each year, around 1,000 are diagnosed in children and adolescents (aged under 18), representing just under 1% of all diagnoses. While incidence of 'childhood cancer' may be regarded as rare, its impact is large. It is often referred to as a 'family illness' as it also impacts siblings, parents, grandparents, and other family members as the child undergoes lengthy treatments of up to two years, which may include long periods of hospitalisation.

Leukaemia is the most commonly diagnosed cancer for those under 10 years of age, representing around one-third of all diagnoses. In adolescents and young adults, lymphoma is the most commonly diagnosed cancer.

In the 1960s, the 5-year survival rate of childhood cancer was around only 10%. Today, due to advances in medicine, science and research, survival rates among Australian children are around 85%. However, the cost of cure is high, as children often battle a lifetime of medical surveillance. Nearly all survivors of childhood cancer will develop at least one chronic health condition. Survivors of childhood cancer are up to 10 times more likely to develop heart and metabolic conditions than other children. Because of this, improving modifiable behaviours, such as increasing physical activity, improving diet and being sun smart, represents important efforts in improving the length and quality of the lives of those diagnosed with childhood cancers. Although limited, emerging research on exercise for children with cancer show the potential for benefit is promising.

WHAT THE RESEARCH IS SAYING

The Australian Government Department of Health suggests that all children should be achieving 60 minutes of moderate-high physical activity each day. A recent study showed that only a quarter of childhood cancer survivors are achieving this recommendation. Efforts are clearly needed to support survivors and their families to become more active.

Exercise research among childhood cancer survivors has shown promise in improving cardiorespiratory fitness, body composition, flexibility, muscle strength, and quality of life. This is vital as all these are known to be diminished both during and after treatment and are associated with longer term health and survival.

TYPES OF EXERCISE RECOMMENDED

There are no established guidelines for childhood cancer survivors, however, as is the case for adults with cancer, exercise should be tailored to the needs of the individual.

During treatment, children are at risk of becoming sedentary and experience decreased fitness, muscle mass and quality of life. Children must be encouraged to move as much and as often as possible:

- Game-based play and wearable technology, such as Fitbits, to increase steps are great for kids, particularly younger children.
- Apps are also a great way to engage the younger generation, e.g. 'UNICEF Kid Power' for younger children or 'Couch to 5K' in adolescents.

After treatment, it is vital for children to participate in aerobic and resistance exercise, such as:

- Aerobic exercise – skipping, jogging, playing outside, swimming, bike riding, school sport.
- Resistance exercise – body weight exercises, resistance bands or yoga, climbing up or along playground equipment.

Muscle strengthening activities can also be useful in increasing the muscle mass lost during treatment, whilst stretching exercises can improve flexibility.

Increasing fitness and strength is great in the short term, particularly for increasing confidence when returning to school and sport, as well as benefits to body-image among adolescent survivors. In the longer term it is vital for preventing other chronic disease.

IMPORTANT THINGS TO REMEMBER

- If children are immunocompromised during treatment, they should avoid busy places where there will be greater exposure to illnesses, such as public pools or playing around sick friends.
- If they have received high doses of cardiotoxic chemotherapy (such as anthracyclines) or radiation around the area of the heart, consultation with their cardiologist prior to participating in high intensity aerobic or resistance exercise is advised.

For all the reasons above, survivors of childhood cancer may have complex medical needs that would be well supported by an Accredited Exercise Physiologist. Treatments and medical considerations may differ considerably across childhood cancers, so there is no one-size-fits-all approach.

There are numerous effects from cancer and therapies that can be improved by being physically active. Many families may not be aware that childhood cancer survivors may be eligible to access Medicare subsidised AEP services. An AEP can provide guidance and education to families about how to safely exercise during and after cancer therapy, which can set up healthy and independent behaviours, leading towards living with improved health for many years.

Expert Contributor: *Dr David Mizrahi PhD, Accredited Exercise Physiologist, Prince of Wales Clinical School, University of NSW.*

TESTIMONIAL

Lochlan was diagnosed with Ph+ Acute Lymphoblastic Leukaemia when he was just seven years old. A normally active and healthy boy was admitted to the Royal Children's Hospital, Melbourne in January 2018 and spent most of that year in hospital.

Lochlan's diagnosis was considered high risk and therefore his treatment consisted of high dose chemotherapy and radiation therapy. Lochlan became very weak and lethargic and some days would struggle to even walk to the shower. He lost all the muscle mass in his legs, was not motivated to do any physical activity, and spent most days in bed due to being so unwell.

Lochlan was given a fitness watch for his birthday and almost instantly was encouraged to get out of bed to increase his steps each day. The watch gave him incentives and daily goals to achieve. It was doing these steps and exercises during the most intense time of treatment that helped with his recovery and the side effects that came along with treatment. Lochlan now enjoys weekly basketball with his friends, something that once was a distant dream. Exercise has absolutely helped Lochlan's recovery and will continue to be a big part of his future.

Testimonial provided by Cass, mum of Lochlan.

EXERCISE & COLORECTAL CANCER

Colorectal cancer (commonly referred to as bowel cancer) is the third most commonly diagnosed type of cancer in Australia. It occurs when abnormal cells in the colon or rectum grow and multiply out of control. Lifestyle choices can influence risk of colorectal cancer. For example, there is convincing evidence that being physically active reduces the risk of colon (but not rectal) cancer; in one large study people who did more exercise had a lower risk of colon cancer than those doing less.

TREATMENT AND SIDE EFFECTS

Treatment for colorectal cancer depends on whether the disease has spread or is likely to spread and may include surgery, radiation therapy and/or chemotherapy. Common side effects are bowel symptoms, fatigue, pain and bloating, tingling/numbness/pain in hands and feet, and psychological distress. Some people also report worsened sexual functioning and urination. In some cases (less than 10%), surgery to remove the tumour means that the bowel cannot be joined back together, and a temporary or permanent opening is created (i.e., a stoma) for the collection of body waste in a colostomy bag.

BENEFITS OF EXERCISE

Exercise during and after treatment improves quality of life and the ability to do daily activities, as well as reduces the frequency and severity of treatment-related side effects. Exercising after a diagnosis of colorectal cancer has also been associated with reduced risk of the cancer recurring and improved overall survival. Emerging evidence also suggests that exercise may improve recovery from surgery and increase ability to complete planned chemotherapy.

TYPES OF EXERCISE RECOMMENDED

Moderate-to-high intensity aerobic and resistance exercise is safe and beneficial during and after treatment for colorectal cancer. If one is not currently exercising then it's recommended to start gradually and progress slowly. If exercising for extended blocks of time (e.g., 20 minutes or more) is too hard or increases fatigue, then exercise can be done in shorter bouts of 5 minutes and completed multiple times in a day.

EXERCISING WITH A STOMA BAG

Exercising with a colostomy bag can have its challenges, but it is not a reason to avoid exercise. Sometimes there are weaknesses in the abdominal wall due to the surgeries related to treatment and stoma, and care is needed to protect this area during exercise. Avoid increasing abdominal pressure (e.g., holding breath during exercises/Valsalva) and protect the stoma bag during swimming or exercise in which the bag may be bumped (e.g., contact sport) or pierced (e.g., rock climbing). Compression garments, high-waisted underwear or exercise clothing, waterproof dressings, and stoma-specific belts, guards or swimwear may help remove some of the barriers to exercising with a stoma bag and protect both the bag and the abdomen. An AEP can help to modify exercises and activities to reduce intra-abdominal pressure or movements that are awkward or painful because of the stoma bag.

Expert Contributor: *Dr Rosa Spence, Accredited Exercise Physiologist, Queensland University of Technology.*

TESTIMONIAL

Jim, 63 years old, was originally referred to see an Accredited Exercise Physiologist for borderline type 2 diabetes. However, during the initial interview it was uncovered that much of Jim's decline in health and energy levels began following bowel cancer treatment 2 years prior. While Jim was considered to be 'cancer free', he reported many of the common ongoing side effects from the chemotherapy treatment such as fatigue, loss in strength and weight gain post treatment. Jim's goals were to improve his energy levels, lose weight (approximately 10kg to lose), and begin to engage in activities he did prior to his cancer diagnosis like bike riding.

Jim was able to participate in a group exercise program ran at his local gym by an Accredited Exercise Physiologist. The program ran over 4 weeks and involved aerobic and resistance exercise that varied between self-paced and group circuit training. Jim also reported to be walking 15-20 minutes on alternative days. Over the course of the program, Jim reported to gain confidence in his ability to perform different exercises and learnt strategies to continue to remain active. So much so, that during a three-month follow-up phone call, Jim reported to have reached his initial goal weight and was now bike riding 10-15 km.

Testimonial provided by Phoebe Roberts, Exercise Physiologist.

EXERCISE & GYNAECOLOGICAL CANCERS

Gynaecological cancers, or cancers of the female reproductive system, include cancers of the cervix, fallopian tubes, ovary, placenta, uterus (endometrium), vagina and vulva.

Gynaecological cancer will make up approximately 9.7% of new female cancer cases in 2019, with 6,454 females estimated to be diagnosed with gynaecological cancer in the year.

Exercise is Medicine® Australia identifies that the optimal exercise program will differ according to type of cancer, the stage of disease and the time since diagnosis. The stage of treatment (completed, current or planned) and any longer-term outlook are important considerations.

For example, programs for women with ovarian cancer who have had extensive open-abdominal surgery and are about to start repeated courses of chemotherapy will need to be tailored to fluctuating treatment-related side effects. Alternatively, women treated for uterine cancer, who have good long-term prospects, but may be obese, will need to incorporate weight loss strategies alongside exercise intervention to reduce the risk of future disease.

BENEFITS OF EXERCISE

Throughout treatment for gynaecological cancer, women often report a variety of side effects such as fatigue, peripheral neuropathy (tingling, burning or numbness), hair and skin issues, and psychological distress.

Exercise can counter a number of these treatment-related adverse effects. For instance, a research review found that exercise had a positive effect on fatigue levels in women with gynaecological cancers, as well as improved other physical indicators such as weight loss, depression scores and aerobic fitness.

In another example, a study conducted in 2011 analysed a walking program for women undergoing chemotherapy for ovarian cancer. Women walked four days per week at a moderate intensity, for 30 minutes each session. Significant improvements were seen in physical functioning. They also experienced decreased symptoms and reported an improved quality of life.

EXERCISE DURING RECOVERY

Exercising regularly once treatment is completed can improve management of existing treatment-related side effects and prevent new side effects from presenting. It will also improve strength and fitness, and in turn, improve quality of life.

However, after surgery and treatment for gynaecological cancer, a range of barriers can present which can restrict access to exercise such as the fear of worsening symptoms, bowel and bladder problems, and being overweight or obese. An Accredited Exercise Physiologist can tailor an exercise plan suitable to the individual needs and stage of treatment of someone undergoing treatment for gynaecological cancer.

Expert Contributor: *Zosha Jarecki-Warke, Accredited Exercise Physiologist, Guardian Exercise Rehabilitation.*

TESTIMONIAL

Testimonial: Maureen, 75, was diagnosed with ovarian cancer (Stage 4B), prior to entering into our exercise intervention research study. Maureen was encouraged by her gynaecological oncologist to take part in an exercise intervention that was part of a research trial. Her treatment schedule was four cycles of neo-adjuvant chemotherapy, then major abdominal surgery (radical hysterectomy), followed by a further two cycles of chemotherapy. She was a regular exerciser prior to her cancer diagnosis and knew the benefits of exercise for someone her age.

Maureen had weekly contact with an Accredited Exercise Physiologist (for an intervention period of 21 weeks) who prescribed an individualised exercise program with a weekly goal of 150 minutes of combined aerobic and resistance sessions at moderate intensity. Throughout the exercise intervention Maureen had limited side effects with peripheral neuropathy being her main concern. Fatigue was a manageable barrier and Maureen was motivated by evidence in other cancer populations about reducing the number and severity of side effects during chemotherapy.

Maureen recovered from surgery relatively quickly and returned to structured walking exercise within four weeks, progressing back to 30 minutes in duration. She received her final dose of chemotherapy with a massive reduction in CA125 levels (1030 to 6.5). Maureen's goals were to maintain function throughout the chemotherapy period and return her fitness to original levels. She is motivated to continue with exercise.

Testimonial provided by Melissa Newton, Accredited Exercise Physiologist.

EXERCISE & LUNG CANCER

Lung cancer is the fifth most common cancer in Australia, and the number of new cases continues to rise. As treatments for lung cancer improve, more and more men and women are living with early or advanced lung cancer.

It occurs when abnormal cells grow and multiply in an uncontrolled way in one or both of the lungs. Lung cancer is also known to spread to other parts of the body including the lymph nodes, brain, adrenal glands, liver, and bones.

There are two main types of lung cancer:

- Non-small cell lung cancer (NSCLC) – about 85% of cases; and
- Small cell lung cancers (SCLC) – about 15% of cases. This type of lung cancer is typically advanced when it is first found.

In addition, there is mesothelioma, which is a rare type of cancer that affects the lining of the lungs and is usually caused by asbestos exposure.

Common treatments for lung cancer may include:

- Surgery (lobectomy, pneumonectomy, wedge resection);
- Radiation therapy;
- Chemotherapy;
- Targeted therapy (target specific gene mutations in cancer cells); and/or
- Immunotherapy.

BENEFITS OF EXERCISE

Exercise may seem daunting for people with lung cancer, especially if breathing is difficult while resting. However, exercise is safe for people with lung cancer and can help manage certain side effects of lung cancer treatments. This includes:

- Improve quality of life and mood;
- Reduce fatigue;
- Reduce inflammation;
- Maintain independence and ability to do everyday tasks;
- Improve ability to walk and overall fitness; and
- Increase muscle strength.

In other chronic lung diseases such as COPD (chronic obstructive pulmonary disorder), aerobic and resistance exercises can help to manage breathlessness, improve sleep quality and reduce the need for hospital admission. Below are possible time points where exercise programs can be built into a treatment plan for lung cancer.

Exercise before lung cancer surgery – "prehabilitation"

Research has shown that moderate-to-high intensity aerobic exercise in the weeks leading up to lung cancer surgery may improve fitness, as well as reduce the time spent in hospital afterwards and risk of post-surgery illness. Exercise has allowed some people to become eligible for surgery who may have previously not been fit for a major operation.

Exercise after lung cancer surgery

After lung cancer surgery, exercise tolerance largely due to a change in lung function is reduced by 10-20%. It may take 6-12 weeks to return to usual daily activities but slowly introducing walking can help to improve fitness levels and speed up recovery time. Gentle breathing exercises and smoking cessation also help recovery.

Exercise and lung cancer survivorship

Improvements in treatments are resulting in more people with lung cancer living a number of years after being diagnosed, both in early AND advanced-stage lung cancer. Positive effects of exercise include:

- Improved functional ability and muscle strength, reduced shortness of breath, and improved quality of life;
- Managing ongoing side effects from lung cancer treatments; and
- Reducing the risk of other health-related issues including diabetes, osteoporosis, heart problems, anxiety/depression, and new cancers.

Exercise and advanced lung cancer

Exercise for those with advanced lung cancer is achievable with guidance and pacing strategies. It can assist to maintain independence of daily activities, reduce fatigue, and improve mood and circulation.

TYPES OF EXERCISE RECOMMENDED

It is recommended to remain as physically active as possible and avoid long periods of sitting or lying down throughout the day. Even small amounts of physical activity (like walking around the dining table) per day is better than doing nothing at all.

At present, there is no 'best' exercise program for people with lung cancer and getting started may feel overwhelming. Depending on the goals of the program, types of exercise might include:

- Aerobic activities (walking, stationary cycling, swimming);
- Progressive resistance training (weights, bands, body weight);
- Balance (including tai chi);
- Breathing; and/or
- Stretching activities (including yoga).

Pulmonary rehabilitation programs are available and include exercise, how to manage breathlessness and tips on how to pace daily activity.

Group-based exercise programs can provide a supportive, safe and enjoyable space and improves mood and quality of life.

IMPORTANT THINGS TO REMEMBER

An Accredited Exercise Physiologist can help a person with lung cancer work towards meeting their goals by measuring their current fitness levels and putting together a personalised and achievable plan.

Certain side effects of treatment may warrant further caution when considering exercise. These could include:

- If the cancer has spread to the brain or bones;
- Extreme breathlessness;
- Low haemoglobin (or anaemia);
- Extreme muscle weakness;
- Changes to memory/concentration;
- Compromised immunity – avoid public swimming pools and public exercise facilities; and
- Peripheral neuropathy.

It's important that any changes should always be mentioned to the AEP or medical team.

Expert Contributor: *Jane Turner, Accredited Exercise Physiologist, Sydney Cancer Survivorship Centre, Concord Repatriation General Hospital.*

TESTIMONIAL

Linda, 49, was diagnosed with Stage 3 lung cancer and underwent a lobectomy followed by chemotherapy. At the same time, Linda remained working full time and caring for her elderly father who also was receiving treatment for advanced lung cancer. Linda was referred for an exercise program to address her increasing breathlessness with general housework and when climbing the stairs – Linda would climb the stairs to answer her telephone, however, remained unable to talk for 20-30 seconds while she caught her breath.

Linda completed an 8-week supervised exercise program at the Sydney Cancer Survivorship Centre, attending 2 sessions per week, focusing on both resistance and aerobic exercise. On completion of the program, Linda was not only able to answer her telephone without needing to catch her breath but was walking up and down the stairs 5 times for her daily exercise. Linda then travelled overseas for her 50th birthday.

Four months after returning from her holiday, Linda was diagnosed with a recurrence of her lung cancer and it had spread to her bones. Linda self-referred back to the exercise program to assist with muscle strengthening, back pain and breathlessness as she wanted to feel well enough to enjoy her daughter's upcoming wedding.

After a second 8-week program, Linda was proud that she could hold the hairdryer long enough to do her own hair, and although feeling extremely tired the next day, was heavily involved in her daughter's wedding day including enjoying the night on the dancefloor.


EXERCISE IS MEDICINE FOR THOSE WITH PROSTATE CANCER, BUT IT'S IMPORTANT TO GET THE RIGHT ADVICE.

EXERCISE & PROSTATE CANCER

In 2019, it is estimated that the risk of a male being diagnosed with prostate cancer by his 85th birthday is 1 in 6, making it the most commonly diagnosed cancer in men. It's characterised by an uncontrolled rate of cell growth within the prostate that has the potential to metastasize (spread) to other parts of the body.

The prostate gland is situated within the pelvis and underneath the bladder. It's responsible for producing the fluid needed for ejaculation. Other conditions that involve the prostate include prostatitis (inflammation of the prostate) and benign prostate hypertrophy (non-cancerous enlargement of the prostate).

BENEFITS OF EXERCISE

Exercise is safe and effective in assisting in the treatment of prostate cancer when suitably prescribed. Research indicates that prostate cancer patients with higher physical activity levels experience a lower rate of death from both prostate cancer and overall.

EXERCISING DURING ADT

Prostate cancer needs male hormones (androgens such as testosterone) to thrive. This means that one of the main types of drug therapy for this disease is androgen deprivation therapy, or ADT. These medications aim to reduce or block the effect of these hormones. Whilst it can be an effective treatment, reducing the amount of testosterone in a man's body has significant side effects. Symptoms can include weight gain, loss of muscle mass and menopause-like symptoms.

It's not all bad news. Research has shown exercise can help to reduce side effects of ADT, without influencing the effectiveness of the drug. This includes treating fatigue, improving strength and endurance, improving body composition, keeping bones strong, and reducing the risk of other diseases.

There is no "one best exercise program" for prostate cancer patients. An individualised approach needs to be taken to meet the patient's specific needs. This is why seeing an Accredited Exercise Physiologist, in consultation with the cancer care team, is the first and most important step in starting an exercise program.

Exercise is medicine for those with prostate cancer, but it's important to get the right advice. Every patient will deal with prostate cancer differently. An Accredited Exercise Physiologist understands the complexities of this condition and can help to make one's treatment journey easier.

Expert Contributor: *Adam Luther, Accredited Exercise Physiologist, Absolute Health & Performance Group.*

TESTIMONIAL

Leo was diagnosed in 2016 with prostate cancer that had infiltrated his bones. After starting chemotherapy and hormone treatment he was experiencing fatigue, nerve pain, muscle aches, weight gain and mood changes. Seven months after his diagnosis, Leo booked in to the exercise physiology clinic to help regain his strength and fitness, reverse his expanding waistline, and improve his energy levels. Together with his Accredited Exercise Physiologist, a tailored exercise plan was devised: he would attend the clinic for weekly supervised exercise sessions, along with a home program which incorporated walking, strength and balance activities, and stretching.

Two and a half years later, Leo credits exercise with changing his life. Though he still experiences pain and fatigue, they are at much lower levels. His strength and fitness have greatly improved over the duration of his treatment, and his weight is gradually decreasing.

Testimonial provided by Kate Williams, Accredited Exercise Physiologist.

BENEFITS OF EXERCISE FOR CHEMOTHERAPY

Chemotherapy is a potent tool to treat many cancers, but it brings with it a vast array of challenges, both during treatment cycles and after treatment. There is a growing body of evidence that shows tailored exercise during chemotherapy can reduce unwanted side effects, improve function and maintain physical health, and has even been suggested to aid treatment outcomes.

1. **Exercise reduces cancer-related fatigue.** Chemotherapy can be associated with persistent and overwhelming physical and psychological fatigue. Exercise is a proven treatment for reducing fatigue and improving its management. Interestingly, low intensity exercise can be as effective as higher intensities and it is important to include both aerobic and resistance training.

2. **Exercise can attenuate chemotherapy-related neuropathy symptoms.** Neuropathy is a relatively common side effect of chemotherapy. With symptoms like numbness, tingling and pain in the hands and feet, it can create difficulty gripping and handling small objects as well as issues with gait and balance. Multi-modal exercise, that is, regular exercise that includes aerobic, resistance and balance exercise, can modify both the severity and prevalence of neuropathic symptoms. If balance is difficult, exercises that offer some support (e.g., a recumbent bike or a treadmill with handles) are recommended.

3. **Exercise helps to maintain physical health.** Chemotherapy can affect how individuals can function physically day-to-day. It can lead to a reduction in both muscle size and strength, as well as fitness. Resistance training has been shown to minimise loss of strength which in turn means that everyday activities, like carrying the children, doing the shopping, or even getting out of the car, don't seem so challenging. It is also important to note that those with advanced cancers tend to lose more muscle mass and as such may find exercise just as beneficial or more.

4. **Exercise reduces risk of cardiovascular disease.** Due to the direct toxic effects of anti-cancer therapies, as well as a decrease in fitness, people undergoing chemotherapy have an increased risk of developing cardiovascular diseases such as heart failure, stroke and coronary heart disease. A study in 2016 found that post-diagnosis exercise was associated with substantial reductions in newly diagnosed cardiovascular diseases or cardiovascular-related death.

5. **Improved completion rates of treatment.** Oncologists provide treatment doses based on what they think will create the best chance of achieving the treatment goal. However, completion can depend on how well the patient can withstand the treatment and its side effects. So, given that exercise therapy can reduce general pain levels, cancer-related fatigue, and neuropathy, it makes sense that it allows more people to fully complete treatment. This can give them the best chance of survival.

6. **Exercise reduces risk of death.** Higher physical activity levels post-cancer is associated with significantly improved survival. That is, those who were sufficiently active (e.g., were doing at least 150 minutes of moderate intensity exercise per week) reduced their risk of dying from cancer or getting their cancer back, particularly for those with breast, colorectal or prostate cancer. The key message from these studies is that when it relates to survival following cancer, some exercise is better than none and more is better than less.

THINGS TO CONSIDER BEFORE EXERCISING

An Accredited Exercise Physiologist will tailor exercises to the current functional status and capacity of each individual patient. These exercises will then be progressed and regressed based on the treatment cycles.

WHAT TYPE OF EXERCISE AND HOW MUCH

It's recommended to exercise before and after each chemotherapy dose but any reactions to the treatment and the side effects should be monitored closely. To help determine how long and hard someone should exercise, it can be really useful to keep a journal to monitor fatigue levels, side effects, etc., and what activities are being done. This will then determine when it's best suited to exercise at a moderate to high intensity level, or when the exercise should be kept light.

An exercise program should involve some resistance and aerobic exercise, as well as balance exercises if needed. Just remember, exercise may sometimes feel like the last thing a cancer patient going through chemotherapy wants to do, but it is likely that during these times they'll benefit the most from doing it.

Expert Contributor: *Holly Evans, Accredited Exercise Physiologist, iNform Health & Fitness Solutions.*

GENERAL THINGS TO REMEMBER WHEN EXERCISING WITH CANCER

BEFORE EXERCISING:

- One size doesn't fit all. It's important for cancer patients to speak with a GP and/or oncologist in conjunction with an AEP to understand the benefits of exercise specific to the cancer type.
- Go at one's own pace. The important thing is to keep active. Every little bit done, no matter how slowly, is going to provide health benefits.
- An AEP may be available at a local cancer treatment centre, or a GP may be able to refer to one as part of a Chronic Disease Management Plan, which provides a Medicare rebate for up to five visits per calendar year.

DURING CHEMOTHERAPY AND RECOVERY:

- Overstretching areas around catheters should be avoided.
- Stomas should be cleaned before and after sessions and when feeling feverish.
- It's important to monitor acute changes in pain levels, gastrointestinal disorders (nausea, vomiting, diarrhoea, etc.), heart rate, blood pressure, and breathing rates. If an unusual symptom presents, a member of the health care team should be consulted.

WHAT TO BE AWARE OF:

- When there is another medical condition(s) (e.g., cardiovascular disease, diabetes, osteoarthritis), further advice from a GP or an AEP is recommended before exercising.
- If post-surgery, intense exercise is not recommended until the wound has healed because it may slow down healing of the surgical site. Once recovering and able to return to normal activities, exercise levels should be gradually increased whilst also looking out for any changes to the wound or pain levels.
- If there are bone metastases, severe peripheral neuropathy, severely reduced blood counts, or other severe side effects or symptoms, it is recommended to see an AEP for support in undertaking a safe and beneficial exercise program.
- If there are any current symptoms that could indicate a cardiac event, such as a heart attack or cardiac arrest, or if there is the presence of an unusual symptom(s) or an unusual, negative change in symptoms, then exercise should be avoided until such time as the health care team has been consulted.

TIP:

HOW DO I LOCATE MY LOCAL ACCREDITED EXERCISE PHYSIOLOGIST?

Currently there are over 5,000 AEPs throughout Australia and your cancer care team will be able to recommend AEPs who specialise in cancer. You can find an AEP close to your home by looking at the online directory provided by Exercise & Sports Science Australia: www.essa.org.au/find-aep.

For more general exercise recommendations and motivation, visit the Exercise Right website, an ESSA initiative providing the public with information on how to exercise right for your health: www.exerciseright.com.au.

SHARING THE IMPORTANCE OF EXERCISE IN CANCER CARE

Here are some stories of everyday Australians who have embraced the benefits of exercise in their cancer journey with the help of Accredited Exercise Physiologists.

"Sarah, 24, was diagnosed with lymphoma and after four cycles of chemotherapy was referred to an AEP due to deconditioning, loss of lean muscle mass and issues with fatigue. Fitness testing results showed that her levels were 15-20% below average and fatigue levels were significantly impacting her ability to engage in work, university, social activities and overall quality of life. Her goals were to participate in a 10km fun run in six months, along with improving her energy levels to allow her to return to university full-time.

Sarah participated in ReActivate, a group-based exercise and self-management program for adolescent and young adult cancer survivors. For 10 weeks she undertook 2 hours of supervised exercise in a group environment, along with 1 hour of education per week on topics such as fatigue management, healthy eating and exercise post-treatment, and how to access community-based supports. Post-exercise program, Sarah saw a significant improvement in cardiorespiratory fitness and muscle strength. After six months, she was back at university full-time and completed the 10km run. Importantly, Sarah adopted a new health behaviour and continues to include exercise into her lifestyle."

Testimonial provided by Andrew Murnane, Accredited Exercise Physiologist.

"Through an initiative supported by Ronald McDonald House, I saw multiple paediatric clients, ranging in age from 6-16 years, most with a diagnosis of some type of leukaemia. The younger children undertook mobility and motor control exercises through games, as well as undertaking basic balance, resistance and cardiovascular exercises. The programs were focused on returning the children to the age-appropriate milestones with movements. For the older children, the programs were both resistance- and cardiovascular-based. One boy in particular wanted to return to sub-elite sprinting so his program included some power movements.

As a result of the program, the younger children were able to keep up with their peers and participate in school and after-school sport without feeling like they weren't able to complete the movements. The older boy was able to return to running and competing again. All of the participants had reduced fatigue and great improvements in mental health thanks to exercise."

Testimonial provided by Eden MacNeill, Accredited Exercise Physiologist.

"After extensive treatment for breast cancer, Laura was left feeling debilitated, so her breast cancer nurse referred her to the breast cancer exercise group at the University of Southern Queensland. Under the guidance and specially formulated exercise program of an exercise physiologist, Laura was able to meet her personal fitness goals.

As a result of the benefits experienced through her exercise program, Laura maintained the abdominal fat needed to form her new breast, with construction occurring in March 2019. She was independently mobilised by day one and her post-operative physiotherapist was so impressed with her recovery that she no longer had to see them after two visits. In fact, she was discharged by day four, with the normal length of stay for this procedure being 8-10 days. Laura claims that, if it wasn't for the support (both with her physical and emotional recovery) and the professional guidance from the exercise physiologists, she wouldn't have been fit for surgery, nor made a speedy recovery."

Testimonial provided by Merendi Leverett, Accredited Exercise Physiologist.

"Simo joined the Moving Beyond Cancer exercise physiology group in June 2016, where he attended the group exercise class once per week on Monday mornings. The class is targeted for men dealing with prostate cancer which Simo was diagnosed with in 2013.

The classes consisted of exercises tailored towards improving strength, balance and aerobic fitness. Whilst a lot of the exercises can also be done at home, Simo found it more useful to attend in person once a week. He appreciated that the experienced and knowledgeable instructors ensured Simo was undertaking the exercises correctly and prevented him from slipping into any bad habits. He also enjoyed the varied program which helped to keep it interesting.

Simo shared that he has enjoyed the camaraderie that develops during these group classes, especially since they all share similar experiences in managing their health issues. Simo credits the enormous positive increase in his physical and mental well-being to attending Moving Beyond Cancer."

Testimonial provided by Dale Ischia, Accredited Exercise Physiologist.

"In 2007, Melanie had her life turned upside down when she was diagnosed with a Stage 4 aggressive metastatic sarcoma in her left buttock. Melanie underwent surgery and had the tumour removed as well as her maximus and medius muscles. Following radiotherapy, Melanie had to learn how to walk all over again.

Fast forward to 2019, Melanie started to complain that her physical well-being was lacking, and she needed help; as a diabetic with heart disease and also a cancer survivor, it was more about maintaining a healthy lifestyle and keeping active. Melanie made the decision to book an appointment with an Accredited Exercise Physiologist and we worked together to see how we could regain her balance as well as her self-confidence.

After completing our 8-week Beat it Program, Melanie is now a regular gym-goer and has noticed a significant change in her balance, confidence and personal well-being. After starting another 8-week challenge, Melanie claims exercise physiology and our team truly saved her life."

Testimonial provided by Brent Collier, Accredited Exercise Physiologist.

"Jenny was diagnosed with Grade 2 breast cancer in June of 2018. She underwent surgery, which unfortunately did not achieve clear margins. This was followed by six months of chemotherapy, radiotherapy and mastectomy with reconstruction. Jenny is now on long-term hormone therapy. Throughout her treatment, Jenny has been under the guidance of an Accredited Exercise Physiologist, attending a supervised breast cancer group exercise class twice per week, yoga twice per week, a home strength program once per week, and daily brisk walking.

Jenny has recovered well in between each type of treatment, has experienced minimal fatigue, and has even returned to boxing three months post-surgery. She feels as though exercise was a way for her to take back some control during her treatment over the past 12 months, and has enjoyed improvements in her strength, balance, cardiovascular fitness, and restoration of mobility after each surgery. Jenny also explained that exercise has helped her mindset immensely, with the social support from the group class, as well as the time spent walking outside amongst nature, making a big difference to her ability to withstand treatment."

Testimonial provided by Lauren Young, Accredited Exercise Physiologist.

"James was 77 years old when he was diagnosed with non-small cell lung cancer (adenocarcinoma) in August 2016. After receiving chemotherapy and radiation treatment, James was referred to the Life Now Exercise program, which is a 12-week program funded by the Cancer Council WA. His main goal was to remain active and maintain his independence despite his cancer treatment.

Sessions ran twice a week for 1 hour where James received an individualised program designed by an Accredited Exercise Physiologist. Through commencing the structured gym based program over 12 weeks, James found his physical endurance improved and he was able to sustain activities for longer periods of time, as well as an improved strength and mobility. He also saw a boost in his energy and mood from regular social interactions with fellow program participants."

Testimonial provided by Shelley Jones, Accredited Exercise Physiologist.

"Robyn, now aged 49, completed major treatment in May 2018 for breast cancer and was experiencing significant side effects due to the chemotherapy bringing on menopause and suffering mood problems after starting her medication. Robyn's care team encouraged her to become more active outside of her usual yoga

and walking, but she was reluctant to join a gym as she felt weak and had pre-existing knee problems (and even yoga felt awkward with her breast prosthesis).

Robyn started attending the weekly breast cancer exercise class supervised by an Accredited Exercise Physiologist. Robyn claimed she gained confidence as well as strength from the classes and found the community of breast cancer patients to be really supportive. Robyn is now doing exercises at home and doing hill walks, as well as more challenging yoga classes.

All of Robyn's doctors have impressed on her how important exercise is in the recovery of breast cancer and in preventing recurrence, and Robyn wishes that all breast cancer patients could access this sort of service."

Testimonial provided by Merendi Leverett, Accredited Exercise Physiologist.

"In 2009, Robert was diagnosed with prostate cancer, which then was followed by a radical prostatectomy operation with all reports saying it was successful. Three months later, after needing to go to the toilet several times a night, he returned to the doctor who told him that, at 76 years old, he has had a pretty good innings. After Robert started attending his local prostate cancer support group meetings, he was then introduced to our team at Aspire Health Rehab this year and the benefits exercise could have on his health.

After just the first one hour exercise session, Robert only had to get up for the toilet three times that evening; now at the end of the eighth session, his trips are around the 2-3 mark maximum per night. Originally presenting with balance difficulties and issues rising from chairs too, Robert's work within his weekly exercise sessions has been successful all round. Robert claims that if only he had been introduced to exercise prior to his operation than life would have been much easier, and that his Accredited Exercise Physiologists have helped him, and others, to live better and enjoy their life through exercise."

Testimonial provided by Kim Chappel, Accredited Exercise Physiologist.

"Diagnosed with brain cancer (oligodendroglioma) in January 2004 with secondary prostate cancer, Chris was 61 years old. After undergoing surgery in 2004, Chris wasn't receiving any further treatment. He made the decision to undertake a 12-week program funded by the Cancer Council WA where he received an individualised program designed by an Accredited Exercise Physiologist.

Although he was very active before commencing the program, Chris lacked formal strength training and wanted to improve his strength to be able to keep up with water sports and other activities. After attending the sessions twice weekly for 1 hour, Chris found that he was not only able to increase his strength, but he also improved his posture and found exercise helped to manage his chronic pain symptoms."

Testimonial provided by Shelley Jones, Accredited Exercise Physiologist.

"Suzanne was diagnosed with breast cancer and wanted to continue to exercise as she was going through her chemotherapy regime. Her bilateral knee osteoarthritis and hip pain meant that she needed modifications to ensure she was able to complete a multi-modal program (aerobic and resistance training). Suzanne found that weekly appointments with her Accredited Exercise Physiologist were important for her as it encouraged her to continue to exercise as her side effects increased.

Suzanne shared that she was glad she was able to keep exercising throughout her whole treatment. Having an appointment meant that on days where she didn't feel like coming in, she felt she did have that commitment, so she still came, and we were able to modify the program. Even a small amount of exercise felt beneficial for her, and on the days where she exercised before her chemotherapy dose, she commented that she actually felt energised. Over this time, Suzanne maintained her upper body and lower body muscular strength and is now looking to continue to exercise post-diagnosis."

Testimonial provided by Holly Evans, Accredited Exercise Physiologist.

EXTRA SUPPORT

CANCER COUNCIL AUSTRALIA

Cancer Council is the only charity in Australia to work across every area of every cancer, from research to prevention and support. They help people from the point of diagnosis through to treatment and survivorship. The Cancer Council website also provides access to the Cancer Directory, a national online portal to help people find cancer care information, resources and services.

www.cancer.org.au | 131 120

The Cancer Council also has state and territory councils around Australia:

Cancer Council Australian Capital Territory
www.actcancer.org

Cancer Council New South Wales
www.cancercouncil.com.au

Cancer Council Northern Territory
www.cancercouncilnt.com.au

Cancer Council Queensland
www.cancerqld.org.au

Cancer Council South Australia
www.cancersa.org.au

Cancer Council Tasmania
www.cancertas.org.au

Cancer Council Victoria
www.cancervic.org.au

Cancer Council Western Australia
www.cancerwa.asn.au

BOWEL CANCER AUSTRALIA

Bowel Cancer Australia is the leading community-funded charity dedicated to prevention, early diagnosis, research, quality treatment and the best care for everyone affected by bowel cancer.

www.bowelcanceraustralia.org | 1800 555 494

BRAIN TUMOUR ALLIANCE AUSTRALIA

Brain Tumour Alliance Australia (BTAA) is a national brain tumour support organisation, focusing on support for the brain tumour patient and their carers. The BTAA also have some wonderful resources such as "It's ok to ask – Questions to ask your healthcare team about your brain tumour and treatment".

www.btaa.org.au | 1800 857 221

BREAST CANCER NETWORK AUSTRALIA

Breast Cancer Network Australia (BCNA) aims to ensure that Australians affected by breast cancer receive support, information, treatment and care appropriate to their needs. BCNA is the peak national organisation for Australians affected by breast cancer and consists of a network of more than 120,000 individual members.

www.bcna.org.au | 1800 500 258

CANCER VOICES AUSTRALIA

Cancer Voices Australia is the independent, 100% volunteer voice of people affected by cancer, working to improve the cancer experience for Australians, their families and friends. They are active in the areas of diagnosis, information, treatment, research, support, care, survivorship and policy.

www.cancervoicesaustralia.org

CANTEEN

CanTeen helps young people (12-25 years old) cope with cancer in their family. Through CanTeen, they learn to explore and deal with their feelings about cancer, connect with other young people in the same boat and if they've been diagnosed themselves, CanTeen also provide specialist, youth-specific treatment teams.

www.canteen.org.au | 1800 835 932

LEUKEMIA FOUNDATION

The Leukaemia Foundation is the only national charity dedicated to helping those with leukaemia, lymphoma, myeloma and related blood disorders survive and then live a better quality of life.

www.leukaemia.org.au | 1800 620 420

LITTLE BIG STEPS

Little Big Steps is a charity aiming to improve the health and well-being of paediatric cancer patients through the use of interactive technologies and practitioner support programs for kids undergoing cancer treatment to encourage physical activity by making 'exercise medicine' all the more fun.

www.littlebigsteps.org.au

LUNG FOUNDATION

Lung Foundation Australia is the only charity and leading peak body of its kind in Australia that delivers life-changing research and programs that support and provide hope to people of all ages with a lung disease, and their families, at every stage of the journey.

lungfoundation.com.au | 1800 654 301

OVARIAN CANCER AUSTRALIA

Ovarian Cancer Australia, founded by people directly affected by ovarian cancer, raises awareness of the disease and support those who had been affected.

ovariancancer.net.au | 1300 660 334

PROSTATE CANCER FOUNDATION AUSTRALIA

Prostate Cancer Foundation of Australia is a broad based community organisation and the peak national body for prostate cancer in Australia. They are dedicated to reducing the impact of prostate cancer on Australian men, their partners and families, recognising the diversity of the Australian community.

www.prostate.org.au | 1800 220 099

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