

Healthy Living

REDUCE YOUR RISK OF CANCER



Prostate Cancer
Support Organisation

About PCaSO

PCaSO Prostate Cancer Support Organisation was formed in 2002 from PSA Solent. Since the charity started it has become one of the largest prostate support groups in the country with a membership of over 900. We primarily cover Sussex, Hampshire and Dorset, and also have members throughout the UK. PCaSO is run entirely by volunteers and has no offices nor paid staff.

The charity aims are to offer help, support, information and to create awareness of prostate cancer. We hold regular meetings across our region, some are on Zoom and others are face to face. The meetings are supported by many urologists, oncologists, dietitians and researchers in the area, who give us talks on a variety of prostate related topics. Meetings are open to all, and there is always the opportunity to meet and talk to fellow sufferers over refreshments at one of our patient forums.

We have a free on request 72 page information booklet, Knowledge Empowers, covering everything you need to know about prostate cancer and our helpline and website are available for anyone with concerns.

PCaSO always welcomes new members and volunteers, we are mostly cancer patients helping other cancer patients, but we also welcome any man, or woman, who wants to volunteer a little of their time to help us. You may have work or life experience and/or skills that can help, or our other member volunteers can guide you. Please join us if you can, you can download a membership form from our website.



Prostate Cancer Support Organisation

A patient support organisation primarily covering
Dorset, Hampshire and Sussex areas
offering a free and confidential service

Email: info@pcaso.org

Website: www.pcaso.org

PSA bookings website: www.psatesting.org/events

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Introduction

This booklet is arranged so that the first three Sections (1, 2 and 3) are mostly suitable for any adult to read, or dip into, and particularly so for men having a precautionary PSA blood test. For men affected by prostate cancer, or those who are curious for more details, we also put extra 'technical stuff' into Section 4, so if you are undiagnosed, skip that section if you wish! Section 5 includes information on books and online sources for any further reading.

As we age, particularly from the age of 40 and each decade thereafter, we are at risk of further health issues accumulating. It is not all down to chance or genes however, we may all benefit in some way from adopting a healthier lifestyle.

The risk of cancer increases with age, as around 75% of all cancers occur in people aged over 60. By taking steps to live healthily we may reduce the risk of any pre-cancerous cells developing, thus preventing cancer in the first place. General health can be important in dealing with cancer, so one is 'fit for the fight'. A basic understanding of how cancer develops is applicable to many cancers, not just prostate cancer.

Age, race and family history are factors influencing prostate cancer risk. Also many men go through medical treatment for prostate cancer without having been sufficiently aware of how much their previous lifestyle choices may have also influenced their risk. Many men are not even aware of where their prostate is, or what it does!

The relevant parts of this booklet may help those men diagnosed with prostate cancer, at different stages, i.e.:

1. men on 'Active Surveillance' for prostate cancer, or on 'Watchful Waiting'
2. men awaiting prostate cancer treatment, such as surgery or radiotherapy
3. patients under treatment* who wish to try and slow the progression of their cancer
4. 'survivors' in remission after successful treatment, to reduce the likelihood of recurrence of their cancer in the future

The preparation of this booklet has involved PCaSO members studying information about healthy living to help both fellow prostate cancer patients/survivors and any - undiagnosed - man over the age of 40 and his family members. We hope it will encourage you to think about any beneficial changes you could make to your lifestyle, and even to do your own research.

It has not been prepared by experts, nor is it a prescription. Some applicable parts of the content have been reviewed by external parties with medical and dietary expertise, who give their support to PCaSO. It is a companion to PCaSO's long established information booklet, Knowledge Empowers, which describes the anatomy of the prostate and medical treatment aspects of prostate cancer, from a patient's perspective.

Note: *A healthy lifestyle is not a substitute for conventional medical check-ups or treatments, but something we can do that may improve our chances of preventing, or combatting, ill-health and cancer. *Ensure you keep your medical professionals aware of any lifestyle changes you are making.*



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This booklet is dedicated to the memory of the late Mr Vivian Miles, former colleague volunteer and PCaSO Trustee, Treasurer of both Sussex branch and the whole charity and Group Leader of Chichester group, who

believed in early detection of prostate cancer and did so much to help support men in their battle against prostate cancer.

SECTION 1



Health and Lifestyle

There are no guarantees, but whether you are a younger person who is currently fit and well, or a middle-aged or elderly person who may have some health issues, adopting a healthy lifestyle may well bring benefits, now and for your future health.

Side effects from medical treatments for cancer can affect quality of life aspects, but some such as hormonal therapies can also increase the risk of other conditions. Also as we age, our risk of heart conditions, stroke, type 2 diabetes or cancer can progressively increase.

Cornerstones to good health are to eat healthily and maintain a healthy weight, together with sufficient physical activity/exercise. These are mentioned in Section 1 then explained more fully in Sections 2 and 3.

There is much more to it, however, for both the mind and body, so as to reduce the risk of cancer. In this Section 1 we firstly describe aspects that are unhealthy, such as stress, smoking, highly processed food and sugary drinks. Then we describe aspects that may contribute to good health.

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CHAPTER 1

Reduce your risk of (Prostate) Cancer

Cancer does not just strike suddenly! It may become apparent suddenly, but it develops from a few of our own cells that have become pre-cancerous over years, or even decades, and hence cancer is a chronic rather than an acute disease. It can be 'hidden' until it reaches a mature stage, then picked up because of screening tests, or urinary symptoms, or tumorous lumps, or even discovered when in hospital for something else altogether. Cancer, alternatively, may stay at an immature stage, controlled by the immune system and never develop into a problem that requires medical treatment. *For more detail, see Section 4, page 55, An overview of cancer risk', and Chapter 3, 'Immunity and the body's defences', in this Section 1.*

Healthy lifestyle habits may slow the progression of pre-cancerous cells by inhibiting mutations and preventing them reaching the mature stage.

A healthy lifestyle may also slow the progression of cancer cells and tumours and may reduce the likelihood of recurrence after treatment.

We outline below firstly what factors contribute to an unhealthy lifestyle and then explain what may contribute to a healthy lifestyle.

An Unhealthy Lifestyle

We may be able to deny cancer an environment that helps it grow, by swapping any 'bad' habits for 'good' ones.

'Bad' habits may include:

Smoking – it is well known that smoking increases the risk of lung cancer, but it also affects the general health of the body. Passive ('second-hand') smoke can also be detrimental. Pioneering research in the USA, reported in an article by the Prostate Cancer Foundation <https://www.pcf.org/c/the-connection-between-smoking-and-prostate-cancer/> indicates that while smoking

does not raise the risk of getting low-grade prostate cancer, it does raise the risk of prostate cancer progressing after diagnosis, and raises the risk of men dying from aggressive prostate cancer.

Alcohol – even at moderate levels alcohol may be linked to cancer and weight gain.

Alcohol is high in sugar, which causes inflammation (cancer is an inflammatory disease), it also increases oxidative stress and can damage and inflame healthy gut bacteria.

Mental stress / fatigue – from anxiety and busy modern lifestyles, can be detrimental to health. The hormone cortisol, produced by stress, can stop cancer cells dying, so permitting them to grow uncontrollably. Also a sense of 'hopelessness' can be pervasive on receipt of a cancer diagnosis.

A sedentary lifestyle – being inactive, e.g. too much sitting down, or 'screen time', or insufficient physical activity and/or exercise. It can also lead to weight gain, should calories consumed exceed calories used.

Poor diet and nutrition – e.g., eating fried, fatty, 'fast food' or highly processed packaged foods. Too much red meat or processed meat, lack of dietary fibre and too few plant-based foods. Taking vitamin and mineral supplements to make up for poor diet and nutrition is **not** the solution.

Our ancestors hunted meat and fish and gathered plant foods (fruits, vegetables, nuts, grains and seeds) for millions of years and only in recent times has food been processed in factories. Such processed food products can be lacking in nutrition and if eaten frequently lead to fatness and obesity. Food marketing claims to health are all around us, making it harder to make genuinely healthy choices.

Added sugar – consuming sugary drinks or high sugar content foods is a 'bad habit', as sugar does not help nutrition so can be considered 'empty calories'. *Consuming a lot of sugar (even just two or more sugary soft drinks a*

week) increases the risk of cancer.

REF. PROF. ROBERT THOMAS, HOW TO LIVE' P.81.

Charred food – e.g., burnt barbecue meats, burnt toast or food processed at high temperatures. Excess heat produces acrylamides in food, which may encourage cancer growth.

REF. PROF. ROBERT THOMAS, HOW TO LIVE' P.49, p55.

Poor gut health (gut microbiome) – insufficient good bacteria, too many bad bacteria, can lead to poor immunity and also affect 'mood', as the gut and the brain are linked via the vagus nerve. (see Chapter 3)

Being overweight or obese – a BMI (Body Mass Index) of 25-29 is overweight, 30 and over is obese. See BMI calculator at <https://www.nhs.uk/live-well/healthy-weight/bmi-calculator/> the chart below indicates the healthy weight range. Obesity is a major factor in poor health and cancer.

As described in Chapter 3 obesity is a cause of chronic inflammation. Obesity is also a major

factor in driving the 'Hallmarks of Cancer' as illustrated in Section 4.

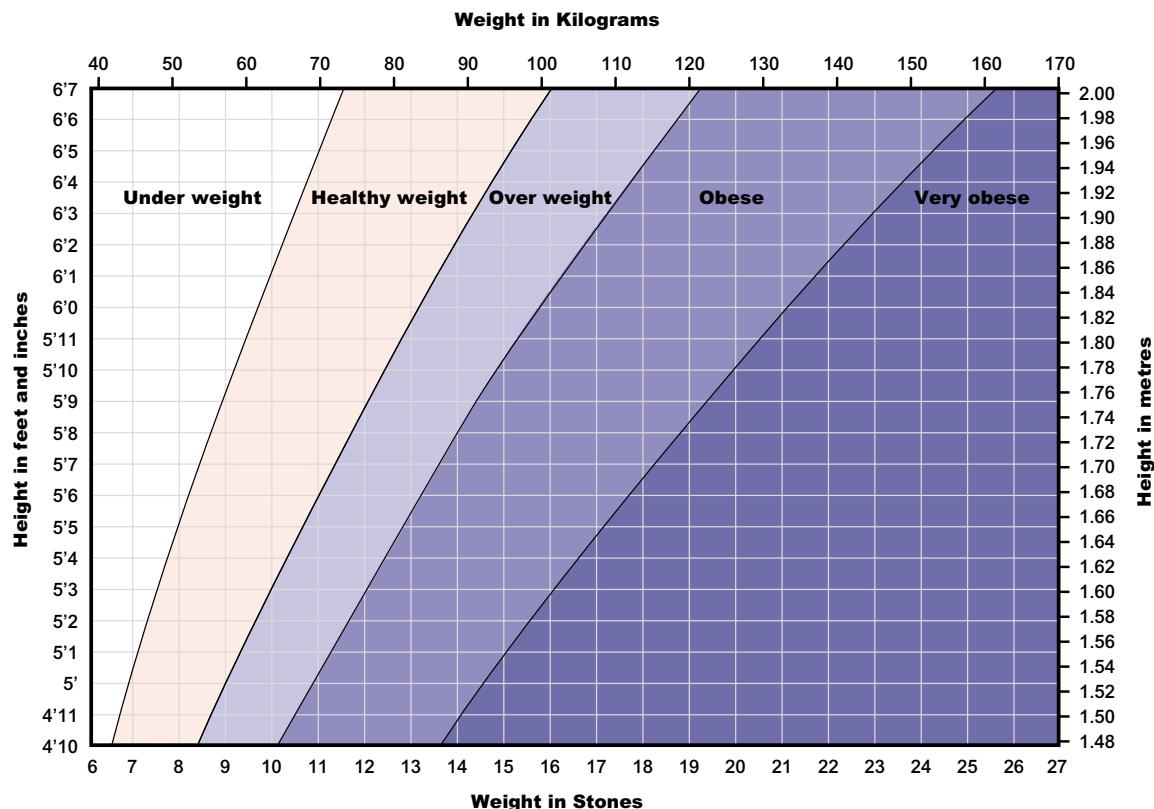
"Obese men are more likely to develop more aggressive prostate cancer and to have more advanced disease at the time of diagnosis"

[COHEN/JEFFERIES, ANTICANCER LIVING, P.242']

Waist size (note: this is not your trouser size) – for men with a waist 94 cm (37") or over

(regardless of BMI), measured midway between bottom of ribs and top of hips - this indicates 'toxic' body fat. Your waist to hip ratio is also a good indicator of health; research has shown that people with 'apple-shaped' bodies (with more weight around the waist) tend to face more health risks than those with 'pear-shaped' bodies (more weight around the hips). Men with a ratio greater than 0.9 may face a higher risk of heart disease and stroke.

See British Heart Foundation <https://www.bhf.org.uk/informationsupport/heart-matters-magazine/nutrition/weight/best-way-to-measure-body-fat>



Poor oral health – plaque, gum disease, tooth decay, or bad bacteria in the mouth, can spread through the bloodstream and cause heart and stroke problems, other diseases and possibly impact the gut microbiome as well.

REF. PROF. ROBERT THOMAS, HOW TO LIVE' P.107.

Poor sleep – can seriously impact general health and weaken our resistance to disease.

Lack of a support network – men can often need encouragement from others to look after their health, get their check-ups, etc. Without the support of family and friends, some men may neglect their health or suffer social isolation. Loneliness and social isolation can lead to stress, poor health outcomes and premature death.

Ageing – as we age our cancer risk can increase, as our biological and immune systems age as well. Prostate cancer usually affects men aged over 40 and typically many men can be around 70 before it is discovered, as there is no UK national screening programme. Men aged 50 and over however are entitled to a Prostate Specific Antigen (PSA) blood test on the NHS. For more details of the prostate and the PSA test refer to the PCaSO Knowledge Empowers 'Prostate Cancer Information booklet', available as a free printed copy on request, or to view on the PCaSO website, www.pcaso.org

A healthy lifestyle ...

key points to consider

Quit smoking – if you do smoke, seek help to stop, as it is not easy because nicotine is so addictive. According to the Prostate Cancer Foundation Patient Guide quitting smoking may reduce the risk of prostate cancer progression and is also associated with improved penile blood flow and erections.

Minimise alcohol – alcohol consumption, even at moderate levels, may cause cancer and weight gain, which in itself can cause problems. If you choose to drink, just have 1 or 2 small (125 ml)

glasses of red wine, with a meal and also drink some water. Do not drink alcohol on an empty stomach. UK guidelines are for a maximum of 14 units per week, and two or three alcohol-free days per week may be sensible. Do not exceed the limits. Do not drink and smoke, as it more than doubles the risk. For more details regarding alcohol consumption and its effects see Section 2 of this booklet.

Mental wellbeing – ensure you are mentally in a good place before you embark on extensive lifestyle changes. See Chapter 4 'Mental Wellbeing'. Make time to relax, e.g., socialising with friends, or being outdoors with some activity or pastime ('the green gym'). Indoor houseplants and pets can also help relaxation. [Mental wellbeing can be affected by the Covid-19 pandemic (still a significant global issue at the time of going to press). Ensure that you follow current guidelines.]

Achieve and maintain a normal weight – keep your BMI below 25 and above 18.5 (aim for a BMI of 21 to 23). A nutritious diet and regular exercise can help in maintaining a healthy weight.

Keep a trim waistline – as explained on page 7 your waist measurement (men) should be less than 94cm (37") and a waist to hip ratio of 0.9 or less is desirable.

Try intermittent fasting – either overnight fasting of 14 hours ('late breakfast, early dinner'), or another, such as the 5:2 diet, with two days per week of your choosing, where calories may be limited to 600 - 800 per day. Our ancestors never had a constant supply of available food to the degree most of us have, and often suffered hunger. Our bodies can benefit from fasting.

Do sufficient physical activity and exercise – regular exercise is an essential part of a healthy lifestyle. 150 minutes of moderate activity or 75 minutes of vigorous activity per week, plus two sessions per week of strength exercises, also flexibility exercises and balance training. Beware, however the danger of undertaking vigorous exercise you are not used to, so build-up gradually.

[For more details see 'Physical Activity and Exercise' in Section 3 of this booklet].

Avoid unhealthy foods, instead eat healthy whole foods – avoid highly processed foods, avoid processed meat and limit red meat to small lean cuts. For example, follow a Mediterranean-style diet with lots of plant-based foods and omega-3 healthy fats such as oily fish, avocado, extra virgin olive oil, nuts and seeds. Limit sugar and salt and be aware that processed foods often contain additives, sugar and salt for flavour. Try and limit use of packaged foods to those minimally or moderately processed, with just a few (healthy) ingredients, also adding extra fresh vegetables to your meal as appropriate. Avoid highly processed packaged foods (sometimes called ultra-processed foods) as these tend to have many ingredients and are usually far less healthy.

Nourish your gut health (gut microbiome) with fibre, with natural bio-yoghurt, other fermented foods and a wide variety of colourful vegetables.

With nutritious healthy eating from a good varied diet, there should be little need for most supplements (except Vitamin D in winter months), unless you have a known deficiency. (See 'PROF. ROBERT THOMAS, How to LIVE, p.238, about the dangers of long-term supplementation.)

For more details about '*Healthy Eating*' see Section 2 of this booklet.

Counter Chronic inflammation - by not smoking, by exercising and by eating fibre-rich foods such as vegetables, fruits, wholegrains and beans. Healthy fats (including those containing omega-3 fatty acids) can also reduce inflammation. Fermented foods such as bio-yoghurt can also reduce chronic inflammation. See also Chapter 3 '*Immunity and the body's defences*'

Build a support network – once cancer has been diagnosed the patient needs ongoing moral and practical support from family, friends and possibly neighbours or members of the local

community. See Chapter 4 'Mental wellbeing' for more information.

Maintain a positive attitude – while we can all have 'bad days' try to maintain a generally positive attitude, whether to adversity, age and/or health problems. A 'young at heart' positive attitude can help immunity, as was reported in New Scientist, 20 March 2021 - '*Don't act your age! People who feel younger than their years tend to live longer*',

Take a broad approach – take more than one step towards a healthy lifestyle, as many different things you do may work together, to improve your chances of better health and anti-cancer effects, e.g. exercise, stress reduction and healthy eating. The greater the amount of lifestyle change towards healthy living the better the benefits could be, due to the synergy of a comprehensive approach and its likely influence on the Hallmarks of Cancer (described in Section 4). For more information see *Synergy and the Mix of Six*, in the book '*Cohen/Jefferies, Anticancer Living*'.

Achieving everything healthy all the time is unrealistic, we all have an occasional lapse, or need a break or a treat. If we get 80% - 90% right we are doing well. It all takes time to make lifestyle changes, depending on where you start from. Once made ensure they become embedded, so you do not go backwards and give cancer and poor health a chance again.

CHAPTER 2

Impacts on health from Androgen Deprivation Therapy (ADT Hormone Therapy) and other treatments

Patients/survivors of prostate cancer diagnosis and treatment tend to suffer more health problems than other men of a similar age.

After treatment, prostate cancer patients may lose previous fitness levels and put on weight. This is particularly so if on Androgen Deprivation Therapy (ADT), known as 'hormone therapy'.

However, PCaSO has members whose healthy diet and exercise choices have helped overcome the side effects of ADT.

ADT and testosterone

Around 50 per cent of prostate cancer patients receive ADT, which lowers the levels of testosterone in the body (since prostate cancer thrives on testosterone). Unfortunately having low levels of testosterone encourages the body to store fat around the abdomen (tummy), a bit like a 'spare tyre'. This may contribute to an increased risk of heart disease, stroke and type 2 diabetes.

Low testosterone levels caused by prostate cancer treatment may also cause muscle wastage which, combined with an increase in weight, makes exercise more difficult. So, a cycle often develops where a man becomes heavier and more unfit as time goes on, leaving him vulnerable to other health problems, even if his prostate cancer has been successfully treated.

ADT can change the way your body handles fat in as little as three weeks, so these health changes can happen pretty quickly.

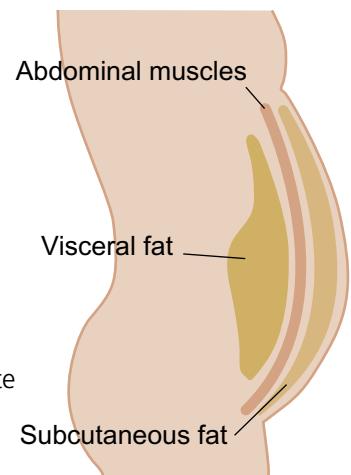
CRPC (castration-resistant prostate

cancer) - research published in the journal 'Science', reported in late 2021, indicates that 'bad' gut bacteria may help tumours create their own androgens (testosterone), offsetting the ADT. The research however found that patients with a high level of a 'good' gut bacteria, *Prevotella stercorea*, had better outcomes. It is early days in this research, but in the future faecal microbiota transplants (FMT) of *Prevotella*, or even a yoghurt drink with this 'good' gut bacteria, may be helpful to CRPC patients.

Abdominal fat

Why is abdominal fat such a problem? We need fat under the skin to keep us warm, but fat stored around the abdomen is different, it is toxic! It produces substances which cause inflammation and also prevents sugar getting into the parts

of the body it needs to reach, e.g., muscles. To compensate insulin production goes into overdrive. This is bad news because insulin comes hand-in-hand with growth factors which stimulate the growth of the prostate cancer, stacking the odds against you.



Insulin and diabetes

ADT reduces testosterone levels and this impacts on how we use insulin. The longer one is on ADT the higher the risk of developing diabetes. ADT can also change high-density lipoprotein (HDL) and low-density lipoprotein (LDL) components of cholesterol.

Bone health

Patients on ADT are more likely to suffer from osteoporosis in the bones, so they should have a regular bone scan (also known as a DEXA scan). See more details online, at Cancer Research UK 'bone loss and cancer treatment'. See also Section 2 of this booklet.

Cardiovascular Disease (CVD)

Some patients on androgen deprivation therapy (ADT hormone therapy) for prostate cancer, who have existing CVD risk factors such as diabetes, prior heart or vascular problems, may have heightened risk of cardiovascular disease. Ask your GP or consultant if you need monitoring and tests to address such increased risk factors. There is a 2019 technical article from the American College of Cardiology, see link: <https://www.acc.org/latest-in-cardiology/articles/2019/07/25/08/34/androgen-deprivation-therapy-and-cvd> but scientific understanding of these increased risk factors is still evolving.

Following a healthy living lifestyle as outlined in this booklet might help also to reduce your risks of CVD.

CHAPTER 3

Immunity and the body's defences

The immune system is the body's natural defence system, an incredibly complex network of cells, molecules, organs and tissues. It protects us by recognising and healing injury and dealing with other threats that might make us unwell, such as toxins, invading viruses or bacteria. The immune system also deals with abnormal cells of the body itself, such as caused by DNA damage or DNA replication errors, or by chronic inflammation or oxidative stress (see page 12). There are two arms of the immune system, the non-specific (innate) part which provides general defence (first-line troops) and the specific (adaptive) part which remembers threats the body has come into contact with before. The adaptive immune system has memory B-cells and (like with vaccines) the next time it recognises a similar threat it already knows what to do and immediately releases antibodies to mark these harmful invading cells for attack and destruction.

The body is daily neutralising threats without us realising it, by means of the patrolling killer T-cells of the immune system. When the T-cells find a target they multiply and signal other immune cells of the threat.

Macrophages are the 'big eaters' of the immune system which engulf harmful cells. *Lymph nodes*, part of the lymphatic system, filter out viruses, bacteria and cancer cells and have them destroyed by white blood cells. Cytokines are the messenger molecules helping coordinate the response to the invasive threat or cancer tumour.

The immune system can also identify 'rogue' cells that are pre-cancerous, or transforming into cancer, or have matured fully into cancer. As with other threats it will kill off potential cancer cells, but if cancer develops it can evolve and mutate to

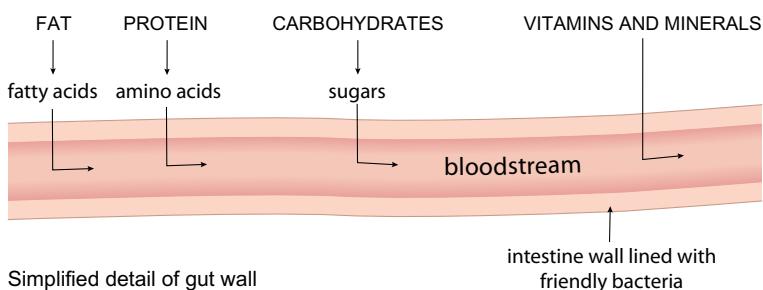
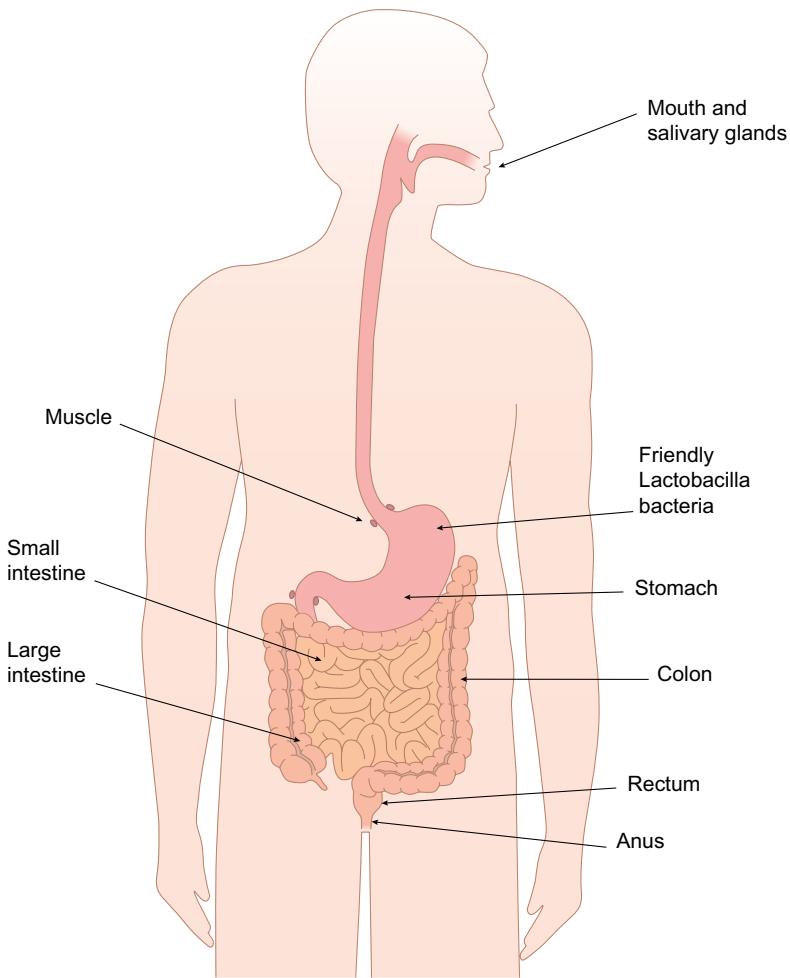
hide from T-cells, and/or switch off the immune response (*hence the research and development of Immunotherapy as an emerging cancer treatment. See also page 65 'The Immune System', of PCaSO booklet 'Knowledge Empowers'*).

We all need to look after our immune system, particularly as we get older, as it can build up inflammation with time and become slower to respond to threats as we age. Our calendar age is just the number of our years lived, but according to an article in the New Scientist magazine 28 March 2020 ('You're only as young as your immune system') our 'immune age' can vary from this by up to 20 years either way depending upon the health of our individual immune system!

The Gut Microbiome

The gut is a vital part of the immune system due to the work of the good bacteria in our gut turning food into nutrients to fuel the body, improving overall immunity and reducing chronic inflammation. The 'gut' (gastro-intestinal tract) is about 9 metres (30 feet) long from the mouth to the anus. It has four main parts, plus the liver, gall bladder and pancreas also contributing to the processes within the gut. The gut starts at the mouth, where food is broken down by chewing (aim to chew about 20+ times per mouthful to break down the food and start the digestive process), the addition of saliva also helps digestion. The stomach, where food is doused in gastric juices and turned into a soupy mixture. The small intestine where most of the nutrients are absorbed from the food into the bloodstream. The large intestine where water, minerals and vitamins B and K are removed and the remaining faeces compacted for eventual expulsion out of the anus, up to 48 hours after eating food in the mouth.

The gut and the brain are connected by the vagus nerve with two-way signalling, which means poor gut health impacts on the brain and our mood. Conversely, if we are mentally stressed this can disturb our gut.

The 'Gut' (gastro-intestinal tract)

Simplified detail of gut wall

There is much we can do to keep the microbiome healthy, nurturing the good bacteria and ensuring a positive balance of good bacteria over bad bacteria and toxins. Phytochemical-rich foods play a major role in this and we also need to eat fibre for the large intestine. For more details of helpful foods see Section 2 'Healthy Eating'.

Oxidative stress

Pollution, smoke and burnt food can contribute to a harmful build-up of 'free radicals' inside our cells, upsetting the oxidative balance. There are biological defences inside each of our cells, protecting and repairing its DNA. (These are not actually part of the immune system, which is outside of the cells). Free radicals can dash about in cells damaging DNA and leading to mutations if growth genes are damaged. Anti-oxidant enzymes can moderate oxidative stress caused by 'free radicals' and so keep a healthy balance within the cell. Daily eating a range of colourful vegetables, fruit, legumes, herbs and spices can help the anti-oxidant system work properly.

Chronic inflammation

Acute inflammation is the body's temporary and normal response to threats and injuries to the human body. However, chronic inflammation is where the immune system is over-working and over-active in its inflammatory response. This is not good and can be a trigger for many diseases including cancer. Chronic inflammation may be caused by smoking, stress, obesity, poor diet or lack of physical activity. According to the World Cancer Research Fund/American

Cancer Institute Continuous Update Project Expert Report 2018, The Cancer Process', **obesity** can cause chronic inflammation, predisposing to both cardiovascular disease and cancer, by an accumulation of macrophages (immune system cells) in adipose tissue (fat), generating inflammatory cytokines and free radicals.

Dietary causes of chronic inflammation

may be: Artificial ingredients in processed foods, processed meats, refined grains such as white bread / flour / pasta, refined vegetable oils (omega-6 fatty-acids) often found in processed and fried foods. (For many people gluten can be a source of intestinal inflammation and discomfort, and intake for such people should be reduced where possible). Some degree of chronic inflammation can also be caused by animal products such as red meat, dairy products, eggs and cheese.

Healthy fats, fibre-rich foods, probiotics and exercise all help to reduce chronic inflammation.

CHAPTER 4

Mental Wellbeing ... and its link with cancer

The World Health Organization defines "Mental Wellbeing" as: "Mental health is not just the absence of mental disorder. It is defined as a state of well-being in which every individual realises his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community."

It may not be obvious when we think about healthy living, but an understanding of how our mental wellbeing is achieved, and how to offset the impact of anxiety and stress, is as fundamental as ensuring we eat healthily and exercise regularly. This chapter is about the mind, spirit, motivation and purpose, and the interplay between mind and body. It is also about interfaces with other people.

Self-empowerment and purpose

Self-care – if you do not do so already, consider taking active responsibility for your overall health. There is so much you can do to look after your body, your mind and your spirit, and there is connectivity between them.

Medical aspects are one aspect of self-care, by regular check-ups, and by 'knowing your numbers' such as weight, BMI, PSA values,

blood pressure, cholesterol, etc and by monitoring the numbers and trends over time. It also applies to ensuring you get offered and take the requisite checks or tests in the first place, by being a knowledgeable patient and being persistent until you get them. Prepare for medical appointments and If you work in partnership with your medical professionals you may get a better outcome than with a 'passive' patient role.

Recognise that with medical staff frequently working under busy pressure we may not always receive the time and personal continuity we might wish for, so being pro-active and knowledgeable can be to your own benefit for your health (See also the PCaSO booklet 'Knowledge Empowers').

Stand up for yourself – be prepared to ask for further information, or a second opinion, or time to consider treatment options. Otherwise you might be pressured into instant decisions, or not be fully informed about all the options, or fully informed about side-effects, things you may later regret.

It may not be easy for you to process treatment proposals and side-effects described by your consultant when you are in shock and stressed by a cancer diagnosis. It can therefore be helpful to have a suitable friend or family member with you to take notes when you are to receive a diagnosis or discuss options with your medical consultant.

Why not join PCaSO, or another support group local to you, for sharing experiences with fellow patients. There are also a number of patient stories on the PCaSO website.

A short period, e.g. a few days or a week, of reviewing information, and consideration before you ask further questions and/or confirm your treatment choice, may be well spent (we suggest you refer to the PCaSO Knowledge Empowers booklet, page 19, for 'Questions to Ask', when seeing your consultant).

Have a sense of purpose and meaning

– a strong interest or ‘passion’ for something and acting on it can add meaning to your life. One option is volunteering for a charity or a community organisation. Having strong reasons for living should bring you fulfillment and happiness, leading to immune-boosting positive hormonal changes.

Make changes – if there is a significant gap between your present lifestyle and what it could be so as to reduce your risk of cancer, then you may want to make radical changes. Where this will have consequences for other family members, then you may need to convince them of your resolve and discuss the changes and implications together.

Social contact and support

Engage with other people – understand that loneliness may lead to poor health, poor choices and even premature death. If you have a cancer diagnosis accept you cannot, and should not, deal with cancer on your own.

Socialise, in person, with friends or family – it is important to avoid loneliness and social isolation, whether or not you have cancer. Take time to meet friends in person for coffee or lunch. Join or start a regular activity group with friends who share the same interests. An active group such as a walking or swimming group may combine exercise with some socialising, so double benefit!

Avoid ‘toxic’ friends – it may seem harsh but it is best to be around positive and cheerful people, especially when dealing with a cancer diagnosis, than mix with those with a negative outlook on life, who may depress you.

Build and nurture a support network

once cancer has been diagnosed, as a patient you need ongoing morale and practical support from family, friends and possibly neighbours or members of the local community. A charitable cancer support group, such as: PCaSO, Macmillan

Cancer Support, Penny Brohn UK, or Maggie’s Centres, can be helpful and supportive.

A supportive and accessible medical team is also important, e.g. GP, urologist, oncologist, nutritionist and specialist nursing staff. Make and maintain the social and technical contacts so you are not alone and are well informed on your cancer journey.

Stress

Unfortunately, many of us having news of a diagnosis or receiving treatment for prostate cancer will have experienced occasions where we are suffering with various degrees of anxiety and depression. Negative emotions and psychological stress can influence the body in many ways, including weakening the immune system, upsetting the gut microbiome and stopping cancer cells from dying. Stress is a very disempowering emotion, which can leave us feeling out of control.

The link between Stress and Cortisol – a person’s exposure to chronic stress increases levels of the hormone cortisol, released by the adrenal glands, lowering immune function. Most cells in the human body have glucocorticoid receptors where cortisol can ‘dock’. This means that when you have a response to stress, cortisol can affect almost every area in your body, which in turn leads to a weakened immune system and inflamed cells.

Prevalence of Stress amongst cancer patients

– according to Professor Robert Thomas, 30% of people with cancer are found to have anxiety or depression. Furthermore, from a recent trial of 41,275 men with prostate cancer, they found a 40% higher prostate cancer death rate among men with a proven diagnosis of ‘depressive illness’.

Sleep and our body clocks

Sleep well – we need between 6-9 hours sleep each night, (ideally about 7-8 hours). With the added complication of cancer, it’s easy to find yourself still awake in the night, but your body needs time to rest and recover. Lack of sleep can

increase your cortisol levels and may negatively impact your immune system. The stress hormone cortisol is also an important circadian rhythm hormone (the natural cycle of physical, mental and behaviour changes that the body goes through in a 24-hour cycle). This means that if you are under stress you may also experience sleep disruption.

Some tips to help you prepare for sleep, and to sleep well are:

- Try and avoid caffeine after about 3 pm each day
- If you have an afternoon nap, do not sleep too long
- Have a walk or some exercise in the day, preferably before dinner
- Allow time (e.g. 3 hours) for dinner to digest before bedtime
- Relax and de-stress before bedtime, eg read, listen to music, or do gentle stretching
- Avoid phone and computer digital screens about an hour before bedtime
- Do not have screens, tv or digital, in the bedroom, nor visible clock faces
- Have a quiet, cool (16-18C) and dark bedroom (darkness releases melatonin, a sleep hormone)
- Have a comfortable bed, mattress and pillow
- Have a regular pattern of going to bed and getting up each day. Going to bed between 10 and 11pm can be better than later for most people, as it can align with our circadian rhythm and the day/night cycle. 11pm or later can also be worse for blood sugar levels.
- If awake in the night for 20-30 minutes, get up, walk around and write down any thoughts/worries

You could also research information, such as the website <https://thesleepcharity.org.co.uk> or the NHS website <https://www.nhs.uk/live-well/sleep-and-tiredness/how-to-get-to-sleep/> or get advice from your GP practice on how to resolve sleep problems.

Stress relaxing techniques

Note: techniques such as Meditation, Mindfulness, etc. are only briefly described in this Chapter. It can be well worthwhile exploring them in more detail and possibly joining an instruction class or a group.

Meditation is a powerful calming technique, best practised daily, based on control of breathing and seeking to use the intuitive part of the brain rather than our overused logical thinking part.

Mindfulness is a well-established practice drawn from Buddhist teachings which focus attention on the 'present experience'.

Visualisation is a popular technique that has harnessed the power of the mind through various therapies for centuries. Visualisation involves creating a mental picture of a desired outcome to a health or emotional issue at some point in the future.

Relaxation exercises are easier and quicker to learn than meditation and can be simple breathing exercises to release stress and provide calming.

Talking therapies can be accessed free on the NHS, either directly by yourself or through your GP. Confidential help is available in person, by video, by phone, or as an online course, to deal with issues like anxiety, stress and depression. See the NHS website.

Other ways of reducing Stress

Yoga, Tai Chi and Qi-Jong – these practices have many benefits, for movement, flexibility, etc but they are also very helpful for calming the mind and body and reducing stress. (see Yoga, Tai Chi and Qi-Gong in Section 3 'Physical Activity and Exercise').

Exercise and Sport – when we exercise, our body releases chemicals called endorphins. These endorphins interact with the receptors in the brain that reduce the perception of pain and also trigger a 'feel good' feeling in the body.

What is the Bristol Whole Life Approach?

Penny Brohn UK
Living Well with Cancer

- The Bristol Whole Life Approach recognises that to be healthy we need to pay attention to all parts of ourselves. Specifically, our mind, body, spirit and emotions, which are all closely connected and work together to support our immune system and its ability to keep us well.
- We strengthen our immune system by eating well, physical activity, doing the things we love and managing stress.
- By learning how to self-care and increase our resilience, we are better able to face whatever life throws at us.
- This powerful knowledge offers hope and a sense of control for those with a cancer diagnosis.
- It doesn't mean we are offering the promise or expectation of cure.
- It does mean we can confidently say we each have natural internal resources that, when supported in the right way, can have a powerful effect on our health and well being.

- Kindness

- Being yourself

- Giving and receiving love

- Forgiveness

- Control

- Trust

- Mindfulness

- Choice

- Knowledge

- Managing stress

- Connecting with others

- Sources of support

- Friendship

- Expressing feelings

- Finding hopefulness

- Accepting a range of emotion

- Self-compassion

- Managing symptoms

- Rest

- Breathing

- Physical activity

- Healthy eating

- Sleep

- Relaxation

- Sunshine

- Clean and safe places.

- Access to nature.

- Freedom from carcinogens

- Creativity

- Connection

- Peace, Hope

- Faith, Joy

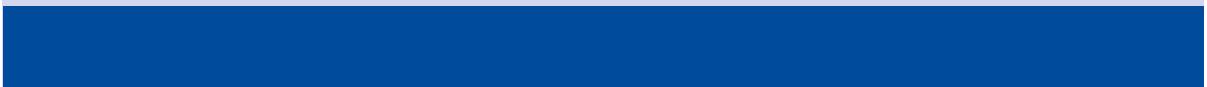
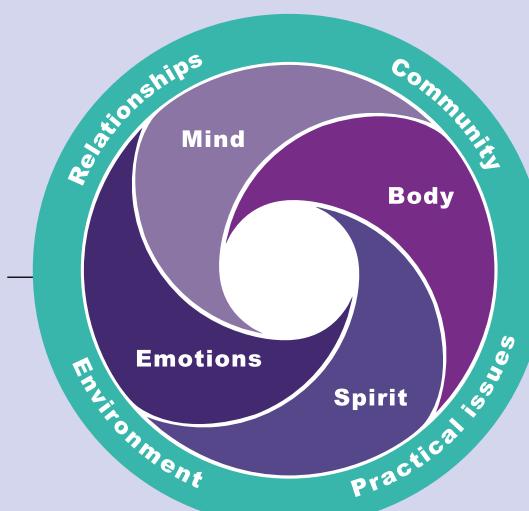
- Purpose

- Finances

- Home situation

- Reducing stresses

- Work/life balance



Endorphins also help your self-confidence, and improve mood-related disorders. (see *Section 3 'Physical Activity and Exercise'*).

According to Prof Robert Thomas, a study of 3000 participants found that doing at least 30 mins of exercise, three times a week, led to a 20% reduction in anxiety and depressive symptoms. Also, the more exercise, the better the mood.

Listen to Music – suitable music for relaxation purposes can provide stress-reduction benefits.

Spend time relaxing in 'green spaces'

– relaxing away from traffic and modern life pressures for 30 minutes or more per week in green spaces, woodlands, or by water, can be beneficial for mental wellbeing. Try it with Mindful Walking, where you are 'in the present moment' enjoying your experience, rather than thinking about things in the past, or the future.

Release your emotions – while many stress-reducing techniques focus on rerouting your negative emotions, sometimes it's good to experience sadness and anxiety. A few tears or crying improves mood for both men and women, perhaps due to parasympathetic nervous system activation, which helps your body calm down from a stressful situation.

Laughter decreases cortisol secretion (the stress hormone) so watch some comedy or just try and find something to laugh about each day. Even just hearing laughter may help your nervous system initiate a "rest and relaxation" response.

Dogs – pet ownership may alleviate stress. Dogs in particular are great stress-reducing

companions, also when walking them you may meet other people for a chat. If you do not have your own, you could offer to walk a dog for someone you know.

Faith and spirituality – a delicate subject.

However, there are many advocates that physical healing is helped by one's connection to a deeper (or higher) energy. Whatever your thoughts or beliefs, it does seem an element of faith or spirituality may be conducive to help in the relief of stress and anxiety too.

Seek Help – there are experts out there skilled in stress-management therapy. Many people have found, that like many things in life, the expense of working with a skilled practitioner is worth the investment many times over.

A great source of help can be **Penny Brohn UK** – a holistic cancer charity based in Bristol. They recognise that all parts of ourselves – mind, body, spirit and emotions – are all closely connected and work together to support our immune system and its ability to keep us well. Some PCaSO members have attended Penny Brohn courses and highly recommend them.

Penny Brohn's approach is based upon research into Psychoneuroimmunology (PNI), the study of the connections between our mind (psycho), nervous system (neuro) and immune system (immunology), since changes in our thoughts, emotions and beliefs may bring about changes in our physical health and wellbeing. PNI is about building resilience into every aspect of life and supporting the body's natural ability to heal and repair itself. See Penny Brohn 'What is the Bristol Whole Life Approach?' on page 16.

SECTION 2



Healthy Eating (Diet and Nutrition)

What, how, and when we eat and drink, and how much, can either help or hinder our bodies, and our minds, to resist cancer and its effects.

Eating and drinking more healthily are a major part of a healthy lifestyle, as are maintaining a healthy weight, reducing stress, sleeping well, keeping physically active and taking regular exercise.

We hope this Healthy Eating guide will make you think about what you usually eat and drink and what you might change, so enabling your good health, vitality and robustness. The habits and benefits of healthy eating and drinking can last a lifetime. Energy balance, low stress and food choices that increase protective nutrients are key to this.

We have not addressed environmental implications or animal welfare aspects, as although they are important, the topic of healthy eating for personal health is complex enough. They may however influence your personal choices.

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Note: some people will have food intolerances or allergies that over-ride any information presented in this section. Also, if you are under treatment for prostate cancer or other conditions, you may wish to advise your doctor or specialist nurse of any significant dietary or nutritional changes you plan to make.

Also see Penny Brohn video – Eating well with Prostate Cancer on www.pcaso.org/videos

CHAPTER 1

Food/Energy Balance helps avoid excess body fat

In recent decades a dreadful combination of factors in developed countries with a so-called ‘Western lifestyle’, have ‘sleep-walked’ people into eating and drinking patterns that make excess body fatness almost inevitable. We explained in Section 1 how being overweight can cause malfunctioning of the body. It can exacerbate blood sugar imbalances and in particular encourage cancer due to chronic inflammation and oxidative stress, things most of us have never heard of before, let alone understood what they mean! The message is quite clear however, *excess body fat is dangerous to our health*. It may worsen so many different conditions, not just cancer. It can shorten our lives, also lead to prolonged poor health in later years, hence reducing the quality of our lives, probably our mobility and agility as well and restricting what we might achieve.

Balancing food (and drinks) consumed against energy requirements is key to weight control. Simply put, if we consume more calories than

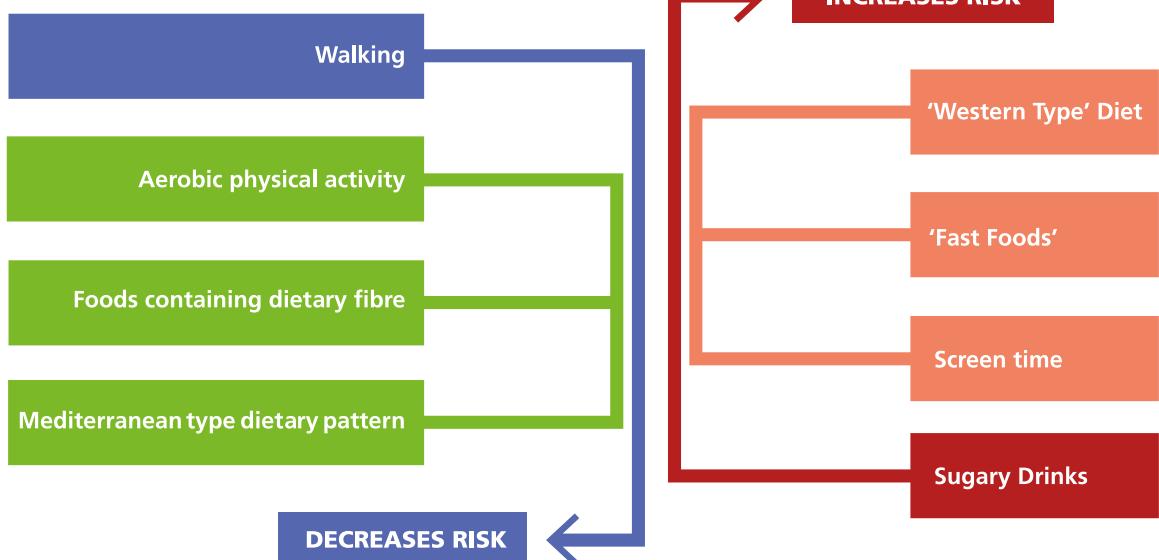
we use as energy, most of us are going to put on weight over time. Studies have shown however that lots of exercise itself is not a way to lose weight. Healthy eating means being active and getting enough *nutritious* food to feed the needs of our bodies, but not too much! Beware of processed foods high in added sugars and fat and low in fibre, vitamins and minerals. They may taste delicious and hence easier to consume too many calories, but without providing sufficient beneficial nutrients for overall health. ‘Fast food’ is also something to be careful about, e.g. a large burger, fries and a sugary drink can themselves use more than 50% of a normal ‘daily allowance’, which is about 2500 calories for a man and 2000 calories for a woman.

Many bulky whole plant foods contain higher fibre, thus helping regulate appetite and reduce cravings.

‘Don’t eat too much in a single sitting. Studies have linked body fat distribution— such as having a lot of weight around your mid-section, with poor outcomes. Controlling portion size is one of the few ways to help fend off the belly fat’.

REF: PCF WELLNESS GUIDE P.73

Risks – increase and decrease. (WCRF)



In their section on 'energy balance and body fatness' of their Third Expert Report, the World Cancer Research Fund International (WCRF) and the American Institute of Cancer Research, identify 12 cancers caused by, amongst other things, greater body fatness. These cancers include advanced prostate cancer.

WCRF also state the following:

'Increased aerobic physical activity, including walking, alongside consumption of foods containing dietary fibre, particularly wholegrains, fruit and vegetables, and higher adherence to a 'Mediterranean type' dietary pattern is more likely to decrease the risk of weight gain, overweight and obesity than modifying any given single exposure.'

Conversely, increased sedentary time, including screen time, in combination with a 'Western type' diet, and consumption of sugar sweetened drinks, 'fast foods', and refined grains is more likely to increase the risk of weight gain, overweight and obesity than any exposure in isolation.'

Stress and its impact on eating

'Anticancer Living begins where stress ends. The presence of stress undermines our good intentions and efforts to eat properly, rest well, exercise adequately or make other health-enhancing changes. Not only does stress inhibit our ability to do the right thing, it tends to trigger us to do the opposite, such as drink too much or smoke... If you come home from work stressed and exhausted, you are less inclined to spend the time chopping vegetables. Stress puts you in the position to say I'm not going to exercise today, or let's go out for a pizza.'

REF: COHEN/JEFFRIES, ANTICANCER LIVING, p. 146.

So we need to fix any stress problems if our efforts at eating healthily are not to be undermined. See Section 1 for ways to deal with stress.

What is unhealthy eating?

There are some foods and drinks we should avoid most of the time, and some we should limit, or moderate.

Our bodies contain hormones that regulate our health. If we are stressed, sedentary, or have unhealthy eating or drinking habits, these can disrupt the hormonal balances within our bodies. Prostate cancer is one of the 'hormonally-driven cancers', alongside breast and ovarian cancer. Poor eating and drinking choices can encourage cancer development.

Food and drink to AVOID

Consuming a high level of carbohydrates, particularly simple, refined and/or processed ones, from a variety of foods and drinks, is a key problem. Unless we are burning off those 'empty calories' quickly, the build-up simply converts to fats, including 'visceral fat' [toxic abdominal fat stored around internal organs]. This is hard to shake off, and may lead to a hormonal condition known as IGF-1 (Insulin-like Growth Factor-1) that can stimulate the cancer to grow.

Eating too much red meat can also be a problem. The Prostate Cancer Foundation (a respected USA charity) in an article 'Less Meat, Less Prostate Cancer' dated 8 March 2022 (pcf.org/c/less-meat-less-prostate-cancer/), cited a new study of more than 200,000 men in the UK Biobank (www.ukbiobank.ac.uk). The study found that 'men who were vegetarian, and men who ate fish (but no meat) were less likely to be diagnosed with prostate cancer compared to men who often ate meat'.

Note: *the study found an association between diet and prostate cancer risk, but that has not proven cause and effect.*

In his book 'How to Live', Professor Robert Thomas explains on pages 52-54 how cancer rates are lower among vegetarians, but that for meat eaters it is not just the quantity of meat that matters, but also the quality.

What to AVOID is listed below. If we can't totally cut out these, then we should at least make a significant reduction in the frequency and amount that is consumed.

Processed meats such as sausages, hot dogs, bacon, salami etc., corned beef, luncheon meat, ham (but Serrano, Parma ham or Prosciutto are ok as prepared in a healthier way). Also try and avoid meat or fish which has been smoked or cured using nitrates or nitrites.

'Processed meat is generally energy dense, can contain high levels of salt, and some of the methods used to create it generate carcinogens'

REF: WCRF – SUMMARY OF THE THIRD EXPERT REPORT.

Highly processed foods (where nutrients have been lost in processing and additives included, often shown as a long list of ingredients on the packet!) such as most packaged ready meals. Some processed products, can be labelled 'healthy', but may have considerable added sugar, saturated fat, salt and additives, etc. They are designed to be very tasty and often are, making them difficult to resist eating and buying them again. However we need to decide what is healthy for us and not rely on marketing claims on packaging.

Refined foods (e.g. those using grains where processing has removed the healthy bran and kernel) such as white bread, white rice and white pasta.

AVOID or LIMIT



Sugary foods such as sweets and chocolate confectionery, sugary breakfast cereals, biscuits. High sugar consumption can lead to a number of serious health issues, not just bad teeth. As well as links with diabetes and obesity, sugar leads to overproduction of IGF-1 that can cause cancer cells to increase rapidly and potentially become more resistant to treatment. The best way to reduce IGF-1 is by regular exercise - and by cutting sugar consumption

Foods cooked at high temperatures

and charred foods should be avoided as the overcooking produces acrylamides which are carcinogenic, e.g. potato chips, crisps, vegetable crisps, burnt toast. If meat is to be barbecued, firstly marinate it with herbs, part-cook before it is barbecued, then cut off any burnt bits before eating. REF: PROF. ROBERT THOMAS, HOW TO LIVE p.55

Tropical fruits such as mango and pineapple are high in sugar, so best consumed in moderation. However, they have naturally occurring sugars rather than added sugars, so are less impactful, also these fruits do contain beneficial nutrients. A mango also has 5g fibre, which is a plus. Half a pineapple has 6.5g of fibre. Consuming with protein / fat / fibre sources to support blood sugar control is helpful for these fruits too, as is getting the bulk of fruit intake from lower GI fruits, e.g. berries, apples, etc.

Sugary drinks - exclude any drinks containing sugar, especially the myriad of 'processed drinks' with their heavily sugared contents (a can of Cola contains approx. 9 teaspoons of sugar). Consuming a lot of sugar (even just two or more sugary soft drinks a week) increases the risk of cancer.

REF. PROF. ROBERT THOMAS, HOW TO LIVE' p.81

Also do not add sugar to tea or coffee.

Fruit juices - it is best to generally avoid buying and drinking packaged fruit juices, but if you do so occasionally, then only choose those that have not

had their pulp removed and that state 'not from concentrate', then limit the amount you drink, as many fruits are used in a carton. It can be easy to rapidly consume a large amount of sugar, even if you juice your own at home. Preferably eat whole fruit as it takes longer to digest, so avoiding a 'sugar hit'.

What about alcohol?

Alcohol consumption, even at moderate levels, may cause cancer and weight gain. If you choose to drink, just have 1 or 2 small (125 ml) glasses of red wine, with a meal, and also drink some water. Do not drink on an empty stomach. Beers, wines and spirits with low or zero % alcohol are now readily available. Do not drink and smoke, as it more than doubles the risk.

Alcohol is quite an important topic of personal choice, as many people enjoy drinking for relaxation and socialising, which are beneficial mental wellbeing aspects to consider when dealing with cancer. While a small amount of alcohol might provide some benefit, especially if it is red wine, as soon as the amount goes up, e.g. drinking 3 or 4 glasses per day, the risks escalate rapidly. It also depends on where you are personally at with your cancer and treatment, so consult your doctor as to what, if any, alcohol is a safe level for you.

The World Cancer Research Fund states on their website

'To reduce your cancer risk as much as possible, we recommend not drinking alcohol at all. If you do choose to drink alcohol, follow national guidelines. In the UK, the guideline is to drink no more than 14 units a week, spread over at least three days for both men and women'.

In his book 'Keep Healthy after Cancer' Professor Robert Thomas has a Chapter 13 on 'Alcohol after Cancer'. He notes on page 191 as to red wine '**the natural antioxidant polyphenols it contains are known to reduce inflammation and**

enhance healthy bacteria in the gut.' He also noted that 'the most important polyphenol is resveratrol and that Malbec, Syrah and Pinot Noir boast particularly high resveratrol contents'.

Prostate Cancer UK state on their website - '

drinking too much alcohol can make you put on weight. Being overweight may increase your risk of being diagnosed with advanced or aggressive prostate cancer' . They also state 'If you have urinary problems after treatment, try to cut down on alcohol as it can irritate the bladder and make these problems worse.'

On the NHS website they have an 'Alcohol Units' section. For wine at 12% volume a small 125ml glass is 1.5 units, a standard glass 175 ml is 2.1 units, a large glass 250 ml is 3 units. (Spirits at 40% are 1 unit for 25 ml, a pint of beer at 5.2% is 3 units).

CHAPTER 2

What is Healthy Eating?

We can be markedly different from each other in how our bodies and digestive systems respond to particular food and nutrients, so we have to experiment to find out what works best for each of us. Any unhealthy habits can be difficult to kick, but even small changes to eating patterns can be beneficial and add-up over time. Most of us will still need the occasional 'treat', which will only be unhealthy if we do it too often!

It is best to eat whole foods [in their natural state, such as from farms, garden or allotment], or minimally processed foods [where a simple process such as milling or grinding has still retained most of the nutrients in the food]. Whole food is higher in nutrient density and fibre than highly processed food. Preferably these whole foods should be fresh and locally sourced (and organic), as transport time can reduce freshness and nutrient value. Some whole foods can still be quite nutritious if you



buy them frozen, or tinned. For example, frozen berries can be as good as fresh berries, but some fresh vegetables may have more nutrients than frozen ones.

Healthy eating patterns - one such pattern that comes well recommended is the Mediterranean Diet, which is not a 'slimming diet' but a healthy pattern of eating based on the traditional cuisine of countries such as Italy and Greece, it does not describe what is eaten in Mediterranean countries today! (There was an extensive Seven Countries study by Ancel Keys in the late 1950's, early 1960's, that found a healthy eating pattern that countered cardiovascular disease).

There is no standard Mediterranean Diet, but typically the main components could include:

- Daily vegetables, fruits, herbs, nuts, seeds, whole grains, legumes (e.g. beans or lentils) and healthy fats

- Twice weekly intake of fish (including oily fish)
- Weekly intake of seafood, poultry and eggs
- Only moderate amounts of dairy products
- Limited intake of red meat (only small lean amounts, once or twice per week)
- Plenty of extra virgin olive oil (which has anti-oxidant and anti-inflammatory properties)

Healthy fats, particularly olive oil, are a mainstay of the Mediterranean diet. Avocados, nuts and seeds also contain healthy monounsaturated fat.

'Following a Mediterranean Diet closely can lead to greater cancer risk reduction.' REF: COHEN/JEFFRIES 'ANTICANCER LIVING', p226.

Make a lifelong commitment to healthy eating. Work out your own healthy eating pattern, which should be for the long-term, not just a quick fix. If you follow a Mediterranean diet you will not be eating large amounts of meat or poultry, so if you can afford it consider organic quality grass pasture-fed products, rather than the cheapest as they can provide healthier nutrients and be lower in pesticides and antibiotics.

Rather than treating meat or poultry as the 'main event' on your plate, try using smaller amounts to enhance the flavour of dishes. There are recipes that can work well with just small amounts/pieces of meat or poultry within the dish, many such recipes are of Asian origin.

Home-cooked whole foods can be the healthiest option, worth the extra time and effort, if you can.

'Flexitarian' diets are becoming popular ways of cutting down on meat, poultry and dairy without going full vegetarian or vegan. For example,

eating fish or chicken at weekends, with very occasional red meat, otherwise eating mostly plant-based foods during the week.

'Healthy Eating Plate' – the 'pyramid diagram' and text for the Mediterranean diet illustrates which foods should be eaten and their frequency, e.g. fruit and vegetables – daily, fish/seafood – 2 or 3 times per week. We illustrate a Healthy Eating Plate for typical meals below

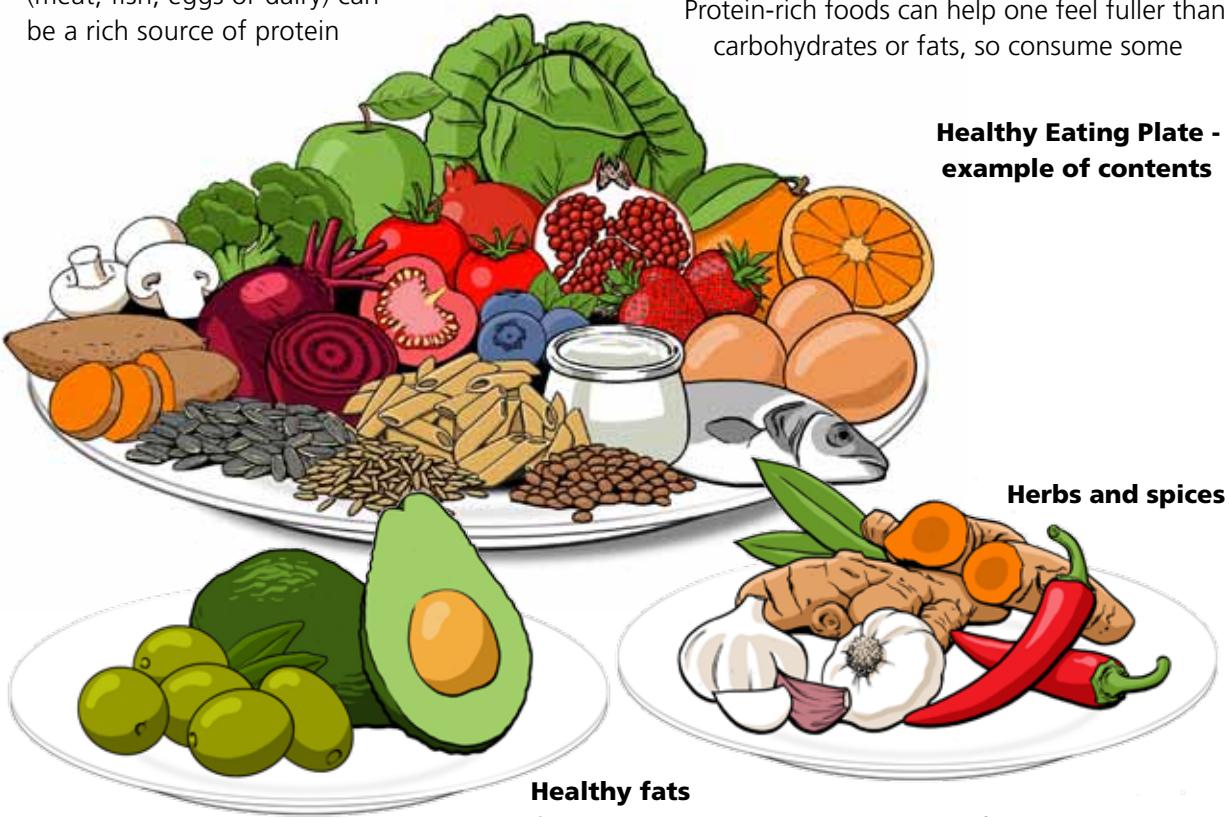
Food types (macronutrients) – protein, carbohydrates, fats

Protein - provides energy and is essential for the growth and repair of the body, protein is needed for immune function and muscle mass. We should allow 0.75g of protein per kg of body weight, e.g. 54g/day for a 72kg person. Amino acids are the building blocks of protein and different foods contain varying amounts and types of amino acids. Animal sources (meat, fish, eggs or dairy) can be a rich source of protein

and contain the essential amino acids needed by the body. Individual plant foods however, do not contain the full range of proteins, but in most diets different plant foods combine to contribute different amino acids, e.g. beans or lentils are complemented by rice. So, if you are vegan you can still obtain all you need. Quinoa, also soyabean, are complete proteins and contain the nine essential amino acids.

Some high-protein foods can be high in saturated fat. If you eat meat make sure it is unprocessed, lean, with most fat trimmed off and vary the type of meat e.g. lamb, beef, pork or game (you may also wish to consider nutrient-rich liver or kidneys). With poultry, remove the skin before eating. If you drink a glass of milk with your meal, or have milk with your cereals, then choose a lower-fat version or a plant alternative such as unsweetened soya, oat, almond or rice milk.

Protein-rich foods can help one feel fuller than carbohydrates or fats, so consume some



Healthy Eating Plate - example of contents

Herbs and spices

Healthy fats

(Extra virgin olive oil is also a healthy fat, e.g. used in a dressing with balsamic vinegar)

protein with every meal, to reduce the feeling of hunger and hence help limit total energy intake (calories). Of this at least one meal a day should be plant protein. Typical protein portion sizes are: skinless poultry or lean meat 100g (without bone), 2 eggs, or 3 tbsp. nuts or seeds.

Carbohydrates – can contain sugars, starches and fibre. They provide the body with its main energy source.

Simple carbohydrates are the less healthy ones, containing mostly sugars, either processed sugars or natural sugars. They can contribute to weight gain, increased risk of diabetes, heart disease and raised cholesterol. Examples are white bread, shop-bought cakes, sugary drinks, highly processed or refined foods.

'Processed sugar and (to a lesser extent) refined carbohydrates are harmful because they are rapidly digested and absorbed, meaning they have a high glycaemic index (G.I.)...On the other hand low G.I. foods slow digestion and absorption, are far better for us as they produce gradual rises in blood sugar and insulin levels that our bodies are able to cope with....The timing and total content of the entire meal can influence G.I. Carbohydrates eaten alone will be absorbed quicker, but pairing them with vegetables or fruits containing fat, protein and fibre will slow gastric emptying and reduce the impact on blood sugar levels'

REF: PROF. ROBERT THOMAS, HOW TO LIVE PP 69-70 AND 75-76

Complex carbohydrates – these are the healthier ones, many of which are starches, provided they have not been refined, take longer for the body to digest and hence less likely to cause spikes in blood sugar. They make fullness last longer, suppressing appetite, and thus helping to avoid overeating. Many are high in fibre, as below:

- Beans and legumes - black beans, chickpeas, lentils, pinto beans
- Fruits – apples (skin on), pears, oranges, peaches, berries, bananas (greenish)

- Nuts and seeds – almonds, peanuts, walnuts, pumpkin seeds, sunflower seeds
- Whole grains –brown rice, quinoa and other grains, oatmeal, cereals, wholemeal bread and wholewheat pasta
- Vegetables – broccoli, brussels sprouts, lima beans, root vegetables, sweetcorn

Fats – saturated and unsaturated fats are both important for good health, but saturated fats from meat and high-fat dairy products should play less of a role than unsaturated fats. Butter is high in saturated fats, so if used spread it thinly. Fats should be consumed in moderation to avoid weight gain, as all fats and oils are high in calories, including the healthier fats.

Trans-fats – mainly found in hydrogenated oils, an ingredient in many processed foods, also in packaged spreads like margarine. Avoid trans-fats as they are not healthy.

Unsaturated fats are:

Mono-saturated fats - can help reduce cholesterol and lower the risk of heart disease – e.g. avocados, olive oil, rapeseed oil, peanuts.

Poly-unsaturated fats – there are several subsets, of which Omega-3, Omega-6 and Omega-9 fats are the main ones. Most of us probably get enough, or too much, Omega-6 fats. They are both essential within our diets, but it is important we try and get more Omega-3 fats, to help reduce chronic inflammation and the risk of cancer. Omega-3 fatty acids are the building blocks for nerve and brain tissue and help our heart beat regularly. The ideal ratio is 1:1 but is rarely met as in most of us likely to be heavily Omega-6 dominant, especially if highly processed foods are consumed, or deep-fried foods, whether of meat, poultry, fish or vegetables.

Omega-3 examples are: walnuts, pecans, chia seeds, hemp, flaxseed (linseed) and oily fish, such as salmon, mackerel, sardines, herring, tuna,

trout, pilchards, anchovies. Fish oil is great source of Omega-3.

Our bodies do not convert much of the plant-based omega-3 into the active form, so it is best to augment these sources with oily fish, or fish oil.



Vegan algae-based supplements are available to augment nuts and seeds when fish can't be consumed.

Omega-6 examples are refined vegetable oils, e.g. sunflower, peanut or sesame oil, also found in processed or fried foods, biscuits etc.

Olive oil – this is an important healthy fat, which contains Omega-3, 6 and 9. The least processed and most healthy is Extra Virgin Olive Oil.

The Digestive System and the 'gut microbiome'

As already referred to in Section 1 a critical element of digestion is the micro-bacteria in the gut (also known as the 'gut microbiome') that help break down food so it can be more easily absorbed by the intestines. The gut can contain both 'good' and 'bad' bacteria, each person will have their own unique set. The simplest way to support good bacteria is by regular consumption of plain natural pro-biotic ('live') yoghurts, whether dairy-based or dairy-free. Prebiotics are foods these bacteria love to thrive upon and

also contain beneficial bacteria for your gut - garlic is especially good in this regard. **Without prebiotics our own bacteria, or any we consume in probiotic foods, cannot thrive.**

Many of the dietary fibre sources listed above contain prebiotics too.

It is too easy to repeatedly shop for and eat similar foods each week. Experiment and try some variety, it can be better for our digestive system to have a broad range of foods for our good bacteria, and it can provide a wider range of nutrients for our bodies. Eat a 'rainbow' of brightly-coloured vegetables, the diversity of colours can mean different nutrients. Aim to eat at least 30 different plant foods each week to help achieve a diverse range of good bacteria in the gut, it is easier than it sounds! If you find it too great

a challenge just start low and add a few more each week.

Fermented foods [where yeast and bacteria break down whole food components, such as sugars, into fermented foods, containing probiotics and prebiotics, beneficial for health and the gut] can also be very important for improving gut health, but be careful to avoid fermented foods with a high salt content. (See page 29 for examples of fermented foods)

CHAPTER 3

Foods for health

Fish: aim to eat at least two servings of fish each week, including oily fish. Fish can help protect against prostate cancer. Oily fish can be a good source of healthy Omega-3 fats.

SEE THE BBC GOOD FOOD OILY FISH GUIDE [HTTPS://WWW.BBCGOODFOOD.COM/HOWTO/GUIDE/OILY-FISH-GUIDE](https://www.bbcgoodfood.com/howto/guide/oily-fish-guide)

Shellfish: scallops, mussels, clams, oysters, crustaceans: crab, lobster, prawns.

'Typically, all shellfish is low in calories and a good source of protein and healthy fats, as well as a good array of nutrients, including zinc, B12, iron and selenium. They are also more nutritious if they are steamed or baked rather than breaded or fried.'



'Shellfish – especially crustaceans – are high in amino acids, known as the 'building blocks' of protein as we need them for growth and repair and the synthesis of hormones and neurotransmitters.'

Shellfish, especially mussels, contain polyunsaturated fats (PUFAs) and good levels of omega-3 fatty acid. These PUFAs can help lower LDL (bad) cholesterol and reduce the risk of heart disease.

Certain shellfish are high in carotenoids, including beta-carotene that converts to vitamin A when consumed. Carotenoids are powerful antioxidants – vitamin A in particular is needed for healthy immunity.

Most shellfish are high in vitamin B12, an important nutrient required for healthy bone formation. Low levels of vitamin B12, can increase your risk of osteoporosis as you age.'

REF: [HTTPS://WWW.BBCGOODFOOD.COM/HOWTO/GUIDE/ SHELLFISH-GUIDE](https://www.bbcgoodfood.com/howto/guide/shellfish-guide)

Caution: some people are allergic to shellfish and shellfish have to be cleaned and prepared properly. For more information see the BBC Good Food shellfish guide mentioned above.

Cruciferous green vegetables: mainly broccoli, cabbage, kale, cauliflower, brussels sprouts and watercress. There is a saying "cancer hates cabbage", and for good reason. Studies have indicated vegetables from the cabbage family may help to significantly reduce the risk of prostate cancer, and may inhibit the further growth of cancer cells. This occurs by complex 'phytochemicals' which reduce inflammation, promote anti-oxidant enzymes and even repair damaged DNA cells. Cruciferous vegetables should be consumed daily to protect against prostate cancer. Home-made vegetable soup is one way to achieve this (e.g. cruciferous vegetables with lentils and beans).

Chilli peppers: contain a natural compound called *capsaicin*, which may help encourage prostate cancer cells to die away, without affecting healthy cells. Capsaicin may also help to balance cholesterol and blood sugar.

Grains & seeds: including quinoa, beans and lentils. As unrefined whole grains, these can reduce the risk of prostate cancer and help protect against future relapse. They contain lignin polyphenol compounds, which influence 'oestrogen receptors', help repair healthy cells, post-radiotherapy, and are beneficial for maintaining bone density.

The top three breakfast cereals recommended by the British Heart Foundation are: Porridge, Muesli (no added sugar), Shredded Wheat. See: BHF - Breakfast cereals ranked best to worst.

See link: <https://www.bhf.org.uk/informationsupport/heart-matters-magazine/nutrition/breakfast-cereals-ranked-best-to-worst>

For the BDA Food Fact Sheet: Wholegrains, see <https://www.bda.uk.com/resourceDetail/printPdf?resource=wholegrains>

Ground Flaxseed is particularly beneficial.

'Flaxseed is an excellent source of both soluble and insoluble fibre, healthy phytochemicals and omega fats....particularly omega 3'. 'SEE HOW TO LIVE BY PROFESSOR ROBERT THOMAS PP, 140, 197 AND 248.

Nuts: e.g. almonds, hazelnuts, peanuts, pecans, cashews. Where un-roasted, these have anti-inflammatory properties, and may help protect against environmental carcinogens. They are linked to a reduced risk of prostate cancer. Nuts are also a source of beneficial Omega-3. One or two Brazil nuts per day provide a natural source of Selenium.

Olive Oil: the only oil that has known anti-cancer activity. Cold-pressed virgin olive oil contains compounds that may help reduce the risk of 'angiogenesis', i.e. the ability of the cancer to create its own blood vessels. It is also effective in reducing 'oxidative stress'. Olive oil is a good source of Omega-3.

Fermented Foods:

bio/live yoghurt – (contains *lactobacillus* to fight bad bacteria), **sourdough bread** – (made with fermented dough with naturally occurring *lactobacilli/yeast*), **miso** – (a paste made from fermented soyabean – a good source of copper), **tempeh** – (fermented soyabean – good probiotics and high in protein), **kimchi** – (fermented spiced vegetables e.g. cabbage – high in vitamins A, B, C and *lactobacilli*) **sauerkraut** – (fermented cabbage - source of probiotics, fibre and iron), **pickled vegetables** – (contain probiotics, fibre and vitamins A and K)

Onions & garlic: including spring onions, leeks, shallots and chives. These may be associated with increased protection from potentially carcinogenic compounds, and inhibit the enzymes that can activate those carcinogens. Garlic particularly has phytochemical properties that may reduce the risk of DNA damage that could otherwise cause healthy cells to become cancerous.

Tomatoes: when cooked, tomatoes release a natural chemical called Lycopene, which is associated with increased inhibition of prostate cancer cell growth. Also found in tomato paste, but probably not so good in sugary ketchup.

Cooking tomatoes in olive oil is the most effective way to gain benefit, or consume with other healthy fats such as nuts or avocado. Lycopene is an anti-oxidant and may be effective against the Hallmarks of Cancer (described in Section 4).

Soya: soya (edamame) beans, soy milk and products such as tofu, tempeh, miso, may be associated with increased inhibition of prostate cancer cell growth, because they contain 'isoflavones' that may influence the hormones, particularly oestrogen, that cancer cells enjoy. Soya also contains Omega-3 healthy fat.

Herbs and Spices: are rich sources of phytonutrients, with antioxidant and anti-inflammatory properties. Also great for adding flavour. Examples are parsley, rosemary, mint, thyme, chives, black pepper, chilli, ginger, turmeric, cinnamon, cardamom. Turmeric merits special mention as having powerful anti-oxidant, anti-inflammatory and anti-cancer properties, but needs black pepper as well to aid absorption.

Berries: strawberry, raspberry, cranberry, blackcurrant and others contain ellagic acid, that may be associated with reduced prostate cancer cell development. Blueberries are also excellent.

Pomegranate: used for thousands of years as a general health remedy. Has anti-inflammatory and antioxidant effects, and may be effective against prostate cancer by helping to slow the progression of the disease.

The benefit is in pomegranate seeds and pulp.



Citrus fruits: mainly oranges, grapefruit, lemons and mandarins, etc. Citrus fruits are another good source of phytochemicals (see Cruciferous

green veg) as well as a good natural source of a variety of vitamins, including Vitamin C, which is an anti-oxidant with potential cancer fighting properties.

Peaches and nectarines: possess potential anti-cancer properties and known for thousands of years as beneficial for health.

Foods to LIMIT to moderate consumption

Dairy - eating or drinking lots of high-fat dairy products such as whole milk, or cheese, might increase your risk of prostate cancer. More research is needed, but dairy products including cheese, contain growth hormone, which is a natural compound, essential for children to grow and develop. However IGF-1 is associated with increased cancer cell development, so a moderate dairy intake would be prudent with a balanced diet including the plant foods mentioned previously. Alternatively try introducing non-dairy drinks, such as soya, oat, almond or coconut milk. (For more technical details see Section 4 Page 59)



Dairy products are a common source of calcium and vitamin B12. Any deficiency is however countered where non-dairy equivalents contain these naturally, or are fortified.

Starchy carbohydrates - limit portion sizes – e.g. potatoes (skins on), note: cooked potatoes left to cool will increase the resistant starch associated with improved blood sugar control.

Red meat - beef, lamb, pork – limit to 1-2 small lean portions per week, preferably organic pasture-fed.

Poultry - (eat without skin) chicken, turkey

Eggs - there are lots of beneficial nutrients in eggs, but for prostate cancer specifically, avoiding excessive amounts of eggs is advisable. Prostate

cancer cells have high concentrations of choline, which is high in eggs. Limiting dietary choline may contribute towards reduced risk of advanced prostate cancer (rather than development of new prostate cancer). (For more technical details see Section 4 Page 59)

Home-cooked cakes or biscuits: make these with less sugar, healthy fats and lower temperature

Dark chocolate: at least 70% + chocolate, from 20g to 45g per day, is a good source of magnesium, polyphenols and fibre.



Note: despite its beneficial nutrients, dark chocolate is high in fat and calories, so limit the quantity eaten. A good quality dark chocolate, possibly organic is preferable. Allow time for your taste buds to adjust to the bitter taste. Dark chocolate pairs well with nuts or fruit, e.g. almonds, hazelnuts, or melted over strawberries.

Drinks and smoothies

Water - normal tap water may contain many chemicals that filtration by the water company is unable to extract, however it can also include healthy additions and, if you live in a 'hard water' area, beneficial calcium for bone health too. You could invest in a mains-fed water-purifier, but a portable charcoal filter (e.g. Brita) is less expensive. Drinking plenty of water is important for good health, it helps maintain blood volume, regulates body temperature and helps flush waste.

Juices - juices made at home (fresh carrot, cabbage, apple, celery, pomegranate, etc.) are a way of delivering potential anti-cancer agents into one's body, particularly when digestion of fibre-rich fruit and vegetables is problematic due to cancer symptoms or treatment side effects. To avoid too much sugar, even from freshly squeezed fruit, mix vegetables and fruit to make the juice, preferably with more vegetables than fruit.

Smoothies – as with juices, best made with vegetables and fruit together, e.g., with kale or spinach, blueberries, banana, and natural yoghurt. Easy to make at home in a blender. Smoothies maintain the fibre content, especially if blended with skins – however we do digest them quicker than whole fruits. Smoothies may be preferable for certain digestive symptoms / side effects. Good tip is to balance fruit with vegetables and protein (oats, nuts and seeds are also good if fibre tolerance / treatment permits)

Probiotic and prebiotic drinks – excellent for the gut and immune system and offer a ‘treat’ during the day. Probiotics are one or more strains of beneficial bacteria, proven in research to being efficiently delivered to the relevant point in your gut (the ‘microbiome’) to do their job. Several probiotics come as sweet drinks, yoghurt, or kefir, a fermented ‘fizzy’ milk drink – rich in probiotic bacteria and a good source of calcium.

Green tea – is associated with reduced angiogenesis, and is an excellent source of healthy polyphenols (including EGCG), but several cups a day are needed to obtain the full benefit. Polyphenols are powerful antioxidants which may protect against heart disease, lower ‘bad’ fat LDL (cholesterol) levels and stop arterial plaque building. Black tea is also beneficial, but far less powerful than green tea. Green and black teas are both cultivated from the *Camellia sinensis* bush, but green tea is only lightly processed, so retains most of its potential anti-cancer properties. However, in the manufacture of black tea, the fermentation oxidises the leaves turning them black, this also reduces the potency of the polyphenols compared to green tea.

Coffee – recent findings support the health benefits, particularly against aggressive prostate cancer, of drinking a moderate amount of coffee each day, e.g., 2 cups, but avoid/minimise sugar, sweeteners or creamer. Caffeine can stay in the body for 6 hours or so, therefore (unless de-caffeinated) coffee/tea is best avoided after mid-afternoon to avoid the risk of impact on sleep.

Cocoa powder – rich in polyphenols, is suitable for hot chocolate drinks, provided unsweetened cocoa powder is used. Also can be used in baking.

Do remember to avoid dehydration. Water, herbal teas, fresh vegetable juices, etc. can contribute to our fluid intake. We should be drinking 2 litres (3.5 pints) of liquid a day, more on hot days.

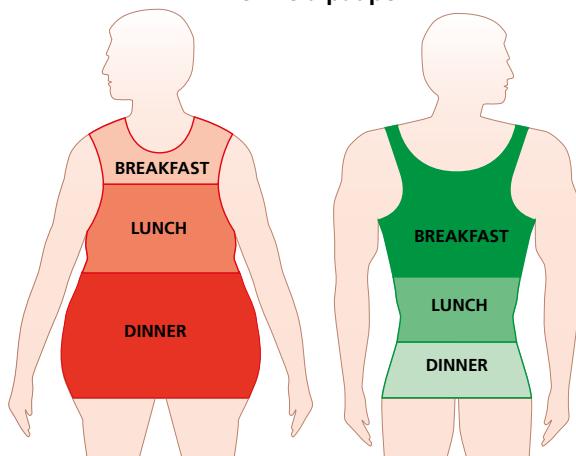
CHAPTER 4

When and how to eat and to cook?

It's probably best to avoid eating a full meal later in the evening. The old saying is “Breakfast like a king, Lunch like a prince, Dine like a pauper”. Some experts do question this, but if a meal is eaten shortly before bedtime, the energy has nowhere to go apart from building fat. It doesn't just sit quietly in the stomach waiting for tomorrow! Also see ‘Fasting’ on page 32.

Limiting portion sizes at mealtimes is important, unless you need to put on weight! Try using a smaller plate and stop eating before you are completely full (it can take about 20 minutes for the brain to signal your stomach is full). It is easy to overeat so do not have a large helping, and take a break before refilling with extra food. If say, we use marmalade on our breakfast bread or toast, then use a reduced sugar one, spread thinly, avoid piling it high! Having a smaller

“Breakfast like a king, Lunch like a prince, Dine like a pauper”



portion (and not snacking between meals) can help greatly with weight control, hence reducing the risk of cancer and other conditions.

Remember to wash fruit and vegetables and thoroughly cook any meat or poultry before eating.

Golden rule in the kitchen - don't overcook the vegetables! Overcooking can destroy the natural vitamins and minerals, reducing the value of that food to your system. It is recommended to grill rather than fry; steam or stir-fry in preference to boiling. The most stable fats to use for cooking are butter and coconut oil. Olive oil and avocado oil, which are high in healthy monounsaturated fats, can be used for dressings and in cooking, but should not be heated to high temperatures.

As much as possible avoid rushed eating. Instead relax at mealtimes and enjoy the food. If we eat slowly and chew our food well it should aid digestion. Mindful eating and social meals with others are also beneficial.

Meal planning – it can help your shopping list preparation if you make, say, a weekly meal plan. What you put in your shopping basket is critical to healthy eating. We do not include any recipes in this booklet, however 'The Doctor's Kitchen' (see Resources in Section 5), is an interesting cookbook with extensive explanations of how the ingredients in the recipes may benefit health. Explore other cookbooks to find recipes that fit your own healthy eating pattern.

Variety is important. For instance we mention in Chapter 3 the top breakfast cereals recommended by the British Heart Foundation are porridge, muesli (no added sugar) and shredded wheat. Just because porridge is top of their list there is no need to eat it seven days a week, delicious though it may be with some banana and blueberries. For example alternate it with muesli (which usually has nuts and seeds as well as oats), or shredded wheat or poached/scrambled eggs with sliced avocado and wholegrain toast.

For any of your meals there is an incredible choice of ingredients, so try something new each week!

Fasting

We do not need to be eating continually. Humans evolved as 'hunter gatherers' over two million years and it may often have been alternating between 'feast' and 'famine', so it should not do us harm to have a break from eating ourselves full.

Fasting can help with weight loss, maintaining a healthy weight and resting your digestive system. A powerful but simple option is an 'overnight fasting' routine which gives your digestive system and microbiome 14 hours of rest between meals (or at least 13 hours, if you cannot manage 14). We can choose our own time slots but, for example, if we finish our dinner at 7pm, refrain from eating anything again until breakfast at 9am the next day, we then have a 10-hour window for eating. Restrict drinks in the overnight fasting period to water, green or black tea, black coffee. After overnight fasting, exercise or a walk before breakfast can help burn stored body fat.

Or, we might wish to follow a 5:2, or even a 6:1 fasting plan. 5:2 is a weight reducing plan with 5 days normal eating per week and 2 days with lower calorie intake (600 or 800 calories). Whereas 6:1 has only one day a week of lower calorie intake and is more suitable if one just wants to maintain a healthy weight.

Note: firstly check with your GP, oncologist, or dietitian, as applicable, for anything other than extended overnight fasting.

Snacking

Avoid snacking between meals. (Note: this can vary between individuals, depending on health requirements. Some people benefit from healthy snacks to avoid blood sugars going too low, or to keep nutrient intakes up).

'Hunger has become an unacceptable sensation in western societies, but it

should be embraced, because this is when weight starts falling.... Instead of grazing throughout the day, it is best to have a meal and allow it to digest completely before the next one. This also allows the digestive mechanisms to rest before the next meal... If you do feel distressing hunger pangs, try drinking water, going for a brief walk or occupying yourself with an activity to take your mind off food.'

REF: PROFESSOR ROBERT THOMAS 'How to LIVE' p.100.

CHAPTER 5

Vitamins, minerals and supplements*

Note: * before consumption check any supplements with your GP or oncologist, especially if pre or during treatment – there are lots of potential treatment interactions.

PCaSO member Mark Giddings writes: "I found in the early days after diagnosis, I was taking some 20 different 'recommended' pills daily. It became all too much and too expensive. Upon detailed research I found that by eating good organic produce, I could give my body the goodness it needed. If you have a healthy, balanced nutritional diet, most vitamins and nutrients your body needs will be delivered by nature. Note however, research now states that your "5-a-day" should now be a minimum of '7-a-day' of which vegetables to fruit should ideally be in ratio of 5:2. Follow this guide and your body will be given the vast majority of nutrients to assist in combatting your cancer".

Vitamins for Bone and Joint Health: after cancer and its treatments, the rate and magnitude of bone and joint problems significantly accelerates. Loss of bone density will lead to osteoporosis and risk of fractures.



Vitamins for Joint Pain: after cancer treatment, osteoarthritis remains the most common form of arthritis, causing pain, stiffness and inflammation within a joint. Studies show that over 50% of patients report joint pains as one of the most troublesome symptoms after cancer.

Turmeric a root emanating from Asia and a member of the ginger family, has been found to profoundly inhibit joint inflammation, often outpacing ibuprofen in its effectiveness. As well as its use in curries, one can mix raw, powdered Turmeric (active ingredient Curcumin) into things like tea, porridge, sauces, etc., or take in pill form. Note that if the raw powder is mixed with a little olive oil and black ground pepper, its effectiveness increases many-fold. Turmeric also works well with black pepper, root ginger and cumin, e.g. in curries! This is an example of synergy of ingredients for the same recipe, where one or more increases the potential healthy eating impact of another ingredient.

Pomi-T is a whole food 'Polyphenol rich' nutritional supplement usually taken as a capsule containing pomegranate, green tea, turmeric and broccoli. In exhaustive medical trials, it is claimed this supplement has proven qualities in reducing PSA, and that in nearly 'half of all men with prostate cancer who use Pomi-T', their cancers had stopped growing or even regressed. Many prostate cancer 'patients/ survivors' have taken Pomi-T.

Calcium evidence now suggests that calcium supplements should only be taken if someone lacks calcium in their diet or to support bisphosphonate therapies (drugs that strengthen bones). Dietary calcium of around 700mg is recommended every day for adults. If you follow a dairy-free diet it does not automatically mean low calcium, as non-dairy milks often have calcium added (check the carton for information).

'In general, adequate calcium intake can usually be achieved by eating one or more portions of these calcium-rich foods every day:

- Dairy products (milk, cheese, yoghurt)
- Shellfish (oysters, mussels, clams)
- Tinned oily fish with edible bones
- Seaweed and algae
- Leafy green vegetables (broccoli and curly kale)
- Nuts and legumes
- Dried fruit (apricots and raisins)
- Soybeans, tofu, kidney beans and baked beans'

'SEE 'HOW TO LIVE' BY PROFESSOR ROBERT THOMAS
PP 229,230

Vitamin D is essential for everyone, but vitamin D absorption declines with age, so more is needed for the elderly. It helps bones absorb calcium, and is particularly important for men on those hormone treatments that risk bone density loss. Small amounts of vitamin D are found in foods including eggs, oily fish, sun-dried mushrooms, vegetables and nuts. However, the major source of vitamin D is sunlight. Many UK residents can be at risk of vitamin D deficiency, even in summer. Maintaining a sufficient level of Vitamin D may provide some protection against prostate cancer mortality. In UK we probably need a daily higher-strength Vitamin D3 supplement through winter months (Oct-March) and possibly a lower dose one the rest of the year. UCSF recommend 1000-5000 IU's of Vitamin D daily.

Note: testing is recommended before commencing Vitamin D supplementation, to avoid excess doses which may be harmful, or avoid taking doses too low which may be ineffective. See your healthcare provider in first instance, or visit www.vitamindtest.co.uk

Vitamin K (K1 and K2) has been found to be important for bone health too. Dietary sources, e.g. leafy dark green vegetables, plus fermented foods and blue-veined cheeses, are nature's way of accessing this vitamin.

Foods for Bone Health after ADT (hormone therapy)

'Multiple prospective studies have examined the relationship between androgen deprivation therapy (ADT) for prostate cancer and bone mineral density (BMD). Bone density reduction is a serious consequence of ADT, with the frequencies of osteopenia and osteoporosis (mild and significant loss of bone density respectively) being directly proportional to treatment duration. Studies suggest that significant bone loss is clearly observed within the first year of ADT.' REF: UNIVERSITY OF CALIFORNIA SAN FRANCISCO (UCSF) HEALTH AND WELLNESS: LIVING WITH PROSTATE CANCER, PART 2: DIET RECOMMENDATIONS P.22.

CHAPTER 6

Plant foods to fight prostate cancer

We have already described plant foods for good health and for cancer prevention. The table (Page 37) is drawn partly from the UCSF publication, as mentioned in Chapter 5. These are plant foods that may help in prostate cancer prevention, or fight the cancer progression. Note there are other plant foods as well and a broad and colourful diversity is also important for the gut (at least 30 different plant foods each week). REF: UCSF HEALTH AND WELLNESS-LIVING WITH PROSTATE CANCER-PART 2 -DIET RECOMMENDATIONS, PP 8,9. (LINK TO THIS PUBLICATION IS SHOWN IN SECTION 5).

Summary

Choose and follow a Healthy Eating pattern, such as the Mediterranean Diet, that meets your needs.

(Although we state Avoid' or 'Limit', occasional treats are still o.k. The main benefit is by following the healthy eating pattern over the long term. However, if you are having to fight hard against your cancer, the closer you adhere to the healthy eating pattern, the better the potential results).

Foods and drinks to AVOID, as much as possible:

- highly processed food, food cooked in fat, ready meals containing sugar, etc.
- processed meats
- charred food, crisps
- shop-bought cakes/muffins, biscuits, sweets and chocolates
- white bread, white rice and white pasta; sugary cereals
- refined sugar, syrups or sugary drinks of any kind (e.g. colas, or fancy coffees loaded with sugar)
- fruit juices (it is best to eat whole fruits)
- alcohol (but if you do drink, just 1 or 2 small glasses of red wine)

Foods and drinks to LIMIT to moderate amounts:

- potatoes (preferably new potatoes, rather than roast or mash)
- red meat (1-2 times per week), preferably organic, grass pasture-fed
- poultry (skinless) e.g. chicken, turkey
- home-cooked cakes, biscuits, etc. (with less sugar, healthy fats and lower temperature 150C)
- good quality dark chocolate (a few small squares)
- sourdough, wholemeal and whole grain breads, wholewheat pasta
- mixed fruit/vegetable juices
- coffee (2 or 3 cups per day)

Foods and drinks to consume in (sensible) abundance:

- seafood, crab, prawns, mussels
- white fish, dark-meat fish and oily fish
- a variety of fresh fruit and vegetables (30+ different ones each week)
- chia seeds, flaxseed
- whole grains - quinoa, oats, spelt, rye, barley, whole wild rice

- nuts, beans, lentils, brown rice, peas, mushrooms
- herbs - parsley, rosemary, mint, thyme, chives
- spicy foods, and spices - chilli, ginger, turmeric, cinnamon, cardamom
- water, green tea, vegetable juices

Hints and Tips:

Vary what you eat to provide diversity of nutrients. Eat a 'rainbow' of plant-based foods

Eat at least 5, preferably 7-10, portions of vegetables and fruit per day (more veg than fruit)

Eat protein with every meal, with some plant protein daily

Look after the digestive system (gut microbiome) with probiotics and fermented foods

Watch your portion sizes. Match calorie intake to activity, if you do less, eat less

Avoid snacking between meals (some snacks are high in fat, sugar and salt)

Try overnight fasting of 14 hours without eating (early dinner + late breakfast)

Only consume moderate amounts of dairy (milk, butter, cheese and eggs)

Try plant alternatives to animal milks. Soy, oat, almond, or coconut

Green Tea helps fight cancer, as does Coffee.

Caffeine may cause dehydration. Avoid caffeine 6-7 hours before sleep

Drink plenty of water. One needs about 2 litres of fluids per day, more on hot days

Approach positively, focus on adding positive foods if you're feeling overwhelmed or anxious about foods...starting where you are at, small changes built up over time = potentially big results.

Your treatment stage, symptoms, side effects and other health factors may also mean some changes are more accessible than others, which is ok. Do what is within reach and build from there.

Foods for Bone Health after androgen deprivation therapy (ADT)

Nutrient	Dietary Sources	Function
Boron	Apples, avocados, beans, milk, peanuts, peanut butter, pecans, raisins, prunes, potatoes.	Improves calcium absorption. Reduces effects of any Vitamin-D or magnesium deficiency
Calcium	Beans, leafy greens (especially collard greens, bok choy and kale), tofu, almonds, canned fish, dairy products, fortified products such as soya milk and cereals.	Improves calcium absorption. Vitamin D is essential for calcium absorption.
Magnesium	Whole grains, nuts, seed, spinach, most fruits and vegetables.	Important in calcium and potassium uptake.
Phosphorus	Meat, poultry, fish, eggs, milk products, legumes and nuts.	Combines with calcium to strengthen bones.
Potassium	Bananas, strawberries, prunes, tomatoes, potatoes, spinach, beans.	Associated with reduced calcium and phosphorus excretion.
Vitamin D	Cold-water fish and fortified products such as soya milk.	Helps absorb and retain calcium and phosphorus.
Vitamin K	Dark leafy greens, liver, tomatoes, soyabean, chickpeas. Also produced by intestinal bacteria.	Associated with reduced bone turnover (the natural replacement of bone cells) and reduced urinary calcium excretion.
Zinc	Fish, oysters, chicken, turkey, tofu, whole grains, black-eyed peas, wheat bran and germ.	Important in calcium uptake and immune function.

TABLE ON PAGE 36 AND 37

REF: UNIVERSITY OF CALIFORNIA SAN FRANCISCO (UCSF) HEALTH AND WELLNESS: LIVING WITH PROSTATE CANCER, PART 2: DIET RECOMMENDATIONS.



Examples of plant foods that may fight (prostate) cancer

Allium vegetables Rich in compounds that have anti-cancer properties. They also support gut-health as pre-biotics (foods for good bacteria).	Garlic Onions, Shallots Spring onions Leeks	Consume frequently or daily from this group. Raw onions are particularly good.
Cruciferous vegetables Rich in minerals, vitamins and anti-oxidants, plus other potential anti-cancer properties	Broccoli, Cauliflower Brussels sprouts Cabbage (incl. bok choi) Greens (spring, mustard) Kale, Watercress Radish and its leaf	Consume daily from this group
Lycopene-rich fruit and veg Lycopene is an anti-oxidant which combats free radicals. It also has potential anti-cancer properties (inhibits cell proliferation and angiogenesis, increases apoptosis)	Tomatoes (especially if cooked with olive oil), tomato puree Guava, Pink Grapefruit, Watermelon	Consume daily, best absorbed with good fats, e.g. olive oil, avocado, nuts.
Beta-carotene-rich fruit and veg.	Carrots, Sweet potato, Beetroot	
Soy and isoflavones Source of protein, fibre, and B-vitamins. Rich in anti-oxidants.	Soy milk, endamame beans, tofu. Miso, tempeh, natto, soy sauce Peanuts, chickpeas	
Berries	Blackberries, gooseberries, strawberries, cranberries, blueberries, pomegranate seeds, Raspberries	Consume berries daily.
Citrus fruits Rich in vitamin C	Oranges, Lemons	
Wholegrains Contain fibre, which helps digestion	Oats, Barley, Wheat, Rice, Quinoa, Freekeh (<i>an ancient grain</i>)	Consume frequently or daily from this group. Oats to be either rolled, or steel-cut, but <u>not</u> superfast/creamy ones. Rice - choose brown/basmati.
Seeds	Flaxseed (<i>also known as Linseed</i>)	Up to 2 tbsp of <i>ground</i> flaxseed daily, e.g. sprinkled onto oats/cereals. It is a laxative so start gently!
Herbs and spices	Chives Turmeric (<i>curcumin</i>)	
Beta-glucans	Mushrooms	

SECTION 3



Physical Activity and Exercise

PCaSO members prepared this section to help fellow prostate cancer patients/survivors. It may also be helpful for any - undiagnosed - man over the age of 40 and his family members. Being active and reasonably fit are key to general health, which together with other aspects mentioned in Sections 1 and 2, may reduce the risk of cancer (or cancer progression, if you have already been diagnosed).

This section is for those who are not very fit, as well as fitter persons wanting to improve their fitness. It is never too late to make a difference!

If, however you are already very fit it may still be helpful, as to reap full benefit your body needs various types of fitness, so you may wish to broaden the mix and type of your exercise activities.

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CHAPTER 1

You should take a sensible and gradual approach to exercise, appropriate to your age, health and existing fitness level. For anything new, start gently and recognise that you are trying to make a beneficial lifestyle change that may take time to build up to moderate levels, and accept that trying to achieve 'vigorous' levels of exercise might be unsuitable if you are elderly, under treatment or have pre-existing health conditions. It would be wise to first consult your GP before embarking on any unaccustomed exercise activities. When you do exercise, if you get chest pain or extreme shortness of breath, stop the exercise and consult your GP.

The Benefits of Exercise

Many trials evaluating exercise programmes have concluded that moderate activity can reduce fatigue, improve mood, psychological well-being and benefit body composition. Other trials have linked exercise, especially if combined with other lifestyle changes, with a reduced rate of PSA (Prostate Specific Antigen) progression in men on Active Surveillance, and a reduced risk of relapse after radical treatments.

"Do Patients with Prostate Cancer Benefit from Exercise Interventions?"

A Systematic Review and Meta-Analysis

JAN 2022 (DENMARK)

The review identified 33 randomised controlled trials (2567 participants) eligible for inclusion... A positive significant effect was seen in lower body strength, whole-body fat mass, general mental health, and blood pressure... exercise is effective in improving metabolic health in men diagnosed with prostate cancer, with aerobic exercise as the superior modality... These findings indicate that using exercise complementarily to prostate cancer treatment may mitigate the development of metabolic disease."

If you need more detail see:

<https://www.mdpi.com/1660-4601/19/2/972>

Regular exercise over the long term changes your energy metabolism, lowers inflammation and oxidative stress (excess of free radicals in the bloodstream), and improves immune response. The associated 'movement' of one's body also helps 'pump' the lymph fluid through the lymphatic system around all internal cells and organs - thus reducing the risk of 'stagnation' (akin to areas of still/sluggish water) and so keeping everything healthily flowing. Studies have shown that faster-paced walking or vigorous exercise significantly reduced the risk of prostate cancer recurrence or prostate cancer death, compared with less intense or slower-paced exercise.

Being fitter is beneficial for men before treatment, as well as for 'survivors' of prostate cancer. The fitter you are before treatment the better the recovery time/outcome, especially for chemotherapy or surgery, but also other treatments such as brachytherapy, radiotherapy or hormone therapy. A fit healthy body and immune system can help overcome any trauma to the body caused by cancer treatment.

If you really wish to help your body combat prostate cancer, exercise is probably the number one thing you should do to help extend your life and lifestyle.

The World Health Organisation (WHO) recommends at least 150 minutes of moderate intensity physical activity throughout the week (or 75 minutes of vigorous intensity) see <https://www.who.int/news-room/fact-sheets/detail/physical-activity>. The NHS recommend a similar amount, see <https://www.nhs.uk/live-well/exercise/>. If you do, say, 30 minutes exercise per day 5 days per week, this aerobic exercise works your lungs and heart, but be aware that muscle strength is also very important to our health. As we age our muscles get weaker, especially if we are ageing with high cancer risk, or are on hormone therapy. Muscle strength increases rapidly into early adulthood then declines naturally from our 30's at about 5% every ten years and declines even more from our 60's and 70's. We need therefore to

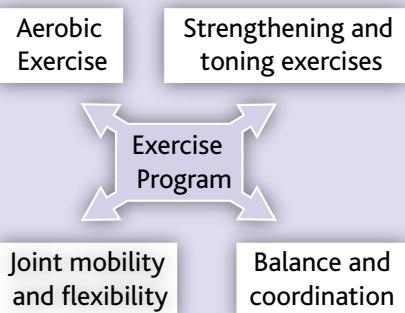
also include resistance exercises at least two days a week, for upper-body, lower-body and core muscle strength. Strength, endurance and balance training, even into our 70's, 80's and 90's, can counteract some of the loss of muscle mass as we age, helping to keep older persons on the move and providing some protection against falls and frailty, especially with activities such as running and sports.

Some studies have also shown that strength training may provide some protection against cardiovascular disease, type 2 diabetes and even cancer.

If you can do it safely, a total of three to five hours each week of exercise, moderate and vigorous aerobic, with resistance training for strength on two days per week, plus flexibility and balance training, can be most beneficial for your health. (The WHO advises that doing 300 minutes a week, rather than the recommended minimum of 150 minutes, can bring additional health benefits).

Physical activity and impact on Prostate Cancer

- For adults, at least 150 minutes (2.5 hours) of moderate intensity activity (in bouts of 10 minutes or more) a week... or 75 minutes of vigorous intensity activity spread across the week
- or combinations of moderate and vigorous intensity activity
- Adults should also undertake physical activity to improve muscle strength on at least 2 days a week.



Exercise is also a great way to relieve stress and hence improve mental wellbeing.

Physical Activity - developing an active lifestyle

Physical activity is something we evolved to do from our ancestors: being sedentary is not our natural state. If you are elderly, but do not do some physical activity, you might experience a 'spiral of decline' leading to frailty. If you cannot stand up for long there are exercises you can do whilst seated. Finding ways to incorporate more movement into your daily life will help keep your muscles engaged. Work on developing an active lifestyle outside of your exercise programme itself. Physical activity improves the flow of blood supply, even gardening or cleaning the house can be beneficial. Try to spend less time sitting down and limit it to 20-30 minutes before getting up for a break. You could move about while you watch TV, or choose active video games. And don't forget to stand up regularly if you sit down to work.

If you are feeling weary, move and get active. It can make you feel better. Get fitter by moving more.

Choosing exercise activities

Find a sport or activity you enjoy, or do several different ones so you don't get bored. You may get more benefit from a mix of activities than just one. Do not try too much at first, build up gradually. You might find it more fun to exercise with other people. Ask a friend or your wife/partner to come with you, or join a sports team, a walking, cycling or a running group.

Choose activities and activity levels you can manage safely. Individuals with pre-existing health issues or injuries should check with their GP before starting any new exercise. If you are on hormone therapy or have cancer that has spread to your bones, check with your doctor before doing high impact exercises such as running or contact sports, as you are more likely to break a bone if you fall. If you cannot do some activities or sports because of your prostate

cancer treatments or other health conditions you might be able to do another one instead, e.g. swimming or cycling.

If you have recently had surgery to remove your prostate take the advice of your doctor as to when and what activities you can safely do. Any exercise following surgery should be light and gentle so that your body can heal properly. You will probably be advised by your doctor to avoid any heavy physical activity for several weeks.

After prostate cancer treatment you could ask your GP for a referral to a local municipal gym for a 12-week supervised programme, see also the later subsection on Leisure Centres. There are also charities such as Macmillan Cancer Support who can assist your rehabilitation after prostate cancer treatment. Cancer survivors in West Sussex are highly fortunate in having the UK's first 'Anti-Cancer' exercise Gym. This local charity, Cancer United, with its CU Fitter gym <https://www.cancerunited.org.uk/cu-fitter/> organises activities and sports specifically for cancer patients' rehabilitation. A number of PCASO members have already participated in these. Each course is overseen by trainers who have undergone extensive training on beneficial cancer treatment. There are specific training sessions for those with prostate cancer and you gain a sense of community sharing your exercise sessions with others 'in the same boat'.

Studies have shown that supervised exercise programmes can often lead to good results, certainly in the short-term. It has also been shown however that once participants leave or the programme finishes, motivation falls and individual activity can decline.

Setting Goals

For your personal motivation it is good to build your own programme of activities, to set achievable goals and measure your progress towards these against time. Once you have achieved a certain level you can reset your goals for the next higher level. If



you have a fitness tracker, sports watch, or even an app on your smartphone you can count your steps and measure your heart rate. Walking 10,000 steps a day is often cited as a useful target, but there is little evidence to support this particular number.

Even less can be beneficial if it includes moderate or vigorous intensity exercise, rather than just ambling around the house and supermarket or strolling down the road to get the number up!

You could download the free Strava GPS cycling and running app (downloadable from the Apple App Store and Google Play Store) which lets you track your cycling and running, share photos and follow friends, etc.

You should also set goals for your resistance training, i.e. number of repetitions and sets. You need to achieve muscle fatigue by the time you complete the number of repetitions. If you find it easy you need to increase the weight or change the resistance band, so as to overload the muscles and improve your strength. As muscles repair they become stronger.

Do not forget to have a rest day once or twice a week, to allow your body to recover. Rest is a vital part of your training programme. Also try and get 7-8 hours of sleep each night.

Pace of exercise

'Your heart rate is the number of times your heart beats per minute (bpm). A normal heart rate is between 60 and 100 bpm while you're resting. However, it will vary depending on when it's measured and what you were doing immediately before the reading'

What is a target heart rate? Your target heart rate (THR) is between 50% and 70% of your maximum heart rate. You should aim to exercise with your heart rate between these two figures. Your target heart rate will make sure you increase your fitness and strength safely.

If you have a heart condition, check with your doctor before doing any new exercises, in case they aren't suitable. You should also warm up and

cool down before and after exercising to avoid injury to your muscles and protect your heart from speeding up or slowing down too fast.

Use this tool to work out your target heart rate.

TRY IT NOW'

REF: [HTTPS://WWW.BHF.ORG.UK/INFORMATIONSUPPORT/HOW-A-HEALTHY-HEART-WORKS/YOUR-HEART-RATE](https://www.bhf.org.uk/informationsupport/how-a-healthy-heart-works/your-heart-rate)

Constant pace training involves keeping your heart rate within a small working zone, e.g. steady walking. It builds endurance and provides a base level of fitness.

Interval training brings further benefits to cardiovascular health and has been shown to benefit cancer survivors on chemotherapy. It involves alternating short periods (e.g. 2 minutes) of intense exercise (50-70% of THR) with periods of easy/moderate recovery. A simple example is to run for 2 minutes, then walk for 1 minute, repeated 6 times.

However, on page 13 of Professor Thomas' book, "Keep Healthy after Cancer, 2020 version", he notes that high intensity exercise can lead to post-exertion malaise and oxygen debt. He states the best results came from supervised exercise programmes with Graduated Exercise Therapy, involving a progressive build-up of intensity over several weeks.

What pace of exercise you might choose depends very much on your personal situation, your present health and fitness, your prostate cancer treatment and its side effects. Take advice from your GP/consultant as necessary and speak to other survivors and sports coaches as applicable.

Types of exercise / sport

Here are some exercise ideas - brisk walking, walking football, Nordic walking, golf (without a buggy!), running, trampolining (One metre diameter home variants are ideal), cycling, swimming, dancing, tennis, using fitness bands at home, or attending organised exercise classes such as Yoga, Pilates, Tai Chi, or gym sessions with a personal trainer, if affordable.

Remember to warm up before you exercise and cool down with some stretches afterwards. Stretching is important as it helps your muscles relax and reduces muscle soreness and stiffness. Stretching and co-ordination exercises are themselves important to maintain balance and avoid falls, which is particularly important for some patients on prostate cancer treatments.

Drink plenty of water, as you must keep well-hydrated, a recommended guide is between two and three litres of 'good quality' water during the course of each day.

Some of these activities are described and grouped below under the following headings 'Green Gym', 'Home Gym' or 'Leisure Activities and Sports', dependent upon where they are mostly carried out.

CHAPTER 2

The 'Green Gym'

The 'Green Gym'- what you can do in the great outdoors

The 'green gym' can be very enjoyable and beneficial, not just physically, but mentally too.

Walking/Hiking

Walking can be an enjoyable and beneficial exercise. Purposeful brisk walking, say at about 3 miles/hour, 30-minutes daily, is excellent. It can increase cardiovascular fitness and endurance. It is also a weight-bearing exercise so can help to build bone strength and muscle in the lower-body. A simple guide for 3mph, is that you should 'just about' be able to hold a conversation.

Walking is a very popular, relatively safe and flexible outdoor activity which one can do alone, with friends or family or as part of an organised walking group. One can be adventurous and explore new places on foot. There are many local groups, there is also 'The Ramblers' charity which represents walkers' interests and organises free group walks around the country, see www.ramblers.org.uk

Nordic Walking

Nordic walking provides all the benefits of a brisk walk, but also exercises the upper body, thus helping to meet prostate cancer rehabilitation recommendations for aerobic exercise and regaining muscle strength in arms, back and shoulders.

More calories can be burned when compared with many other activities. Like swimming, Nordic walking is a whole-body exercise – whereas cycling or running are lower-body dominant. Nordic walking combines aerobic (heart and lung) with resistance (muscle strengthening) exercise; put simply, more muscles are actively involved in Nordic walking movement, and the better the technique, the more calories you burn.



You do need to be properly trained though, by a registered instructor. You might think it is just like using two of the normal walking poles, but using the Nordic poles with their special glove-style straps is very different and the technique needs to be learnt to be effective and safe. Nordic poles are not expensive (from about £20 a pair), but if you take lessons or join a group they may supply poles. Once properly taught by a registered instructor you'll have learned an amazing 'green gym' exercise for life.

Nordic walking uses more major muscles than running, cycling or swimming, so it is a great option for cross-training. However, it doesn't involve the same constant pounding as running (without appropriate footwear), so you can reap the cardio and muscular endurance benefits by using poles, with less impact on your knees and other joints.

After training you will be qualified to Nordic walk on your own anywhere - pack your poles and you are off! More locally, however, there are a number of groups throughout our region, of mixed abilities and experience, who walk together on a regular basis. Refer to the websites in section 5.

Cycling

The majority of us have cycled sometime in our lives, and once learned it's a skill never forgotten. Dust off that old bike, give it an oil, check the brakes, and get pedalling! Cycling is a great aerobic exercise, burns calories, gets the heart working, and is very low impact on dodgy knees and joints. However, it does not have much upper-body benefit, so TRX suspension, exercise bands or even bean tins bicep curls should be used to complement cycling and give balance to your fitness regime.

There's so much useful equipment for cycling available nowadays in major outlets and online but, essentially, all you need to start with is a safe and comfortable bike, a helmet, and comfortable clothing to suit the conditions, not forgetting



the suntan lotion on sunny days. Don't forget to take some water if you're trying more than a quick once-round-the-block, and don't overdo it on your first few rides. You could try a fitness tracker for information and target motivation.

Your saddle is your friend and should make the ride a pleasure. Don't use a hard, pointy saddle unless you are comfortable. There are so many different saddles available for leisure cycling use nowadays, including sprung, gel, a man's 'gangly-bits' hole, and droopy nose. Saddle adjustment is also very important, to look after what we have left down below, and you can refer to the links below for how to set it.

Road bike saddles: <https://roadcyclinguk.com/how-to/technique/beginners-guide-set-correct-saddle-angle-road-bike.html>

Off-road bike saddles: <https://www.bikeradar.com/features/how-to-adjust-your-mountain-bike-saddle-angle/>

Main road cycling is not to be encouraged unless there are dedicated cycle lanes. Try to find quiet roads or lanes. Better still, if your bike has suitable tyres, take it to off-road bridleways and tracks. Remember you can cycle on bridleways, but not on footpaths. Try not to push hard

gears early on, keep up a good cadence (pedals turning faster) in an easy gear, this will build muscle strength and increase endurance.

Before venturing out remember:

- Wear a helmet. For road use know the Highway Code, wear a bright yellow or orange tabard. Fit flashing lights. See and be seen!
- Wear suitable clothes for the conditions.
- Take water, basic bike tools and a puncture repair kit.
- Ensure the bike is serviced and roadworthy. Pump the tyres to pressure and check the bell works.
- Be vigilant and aware of your surroundings and other road users. Don't wear earphones.
- Don't ride the bike within 48 hours of a forthcoming PSA test!! (It can massage the prostate and so may cause your PSA reading to be unusually high).

The writer, Brian Holden's prostate cancer experience, following two separate courses of hormone treatment, HDR brachytherapy and two separate courses of radiotherapy, left him with severe leg muscle wastage. Unable to cycle up hills onto the South Downs Way, he decided to take the plunge and have a professional electric conversion of his own mountain bike. This conversion has been a lifesaver, as hills never attainable before are now cycled comfortably. The distance travelled has doubled, without doubling the effort. No more tiredness cycling into a headwind, especially on the way home after a long ride.

Running

Running is a very flexible outdoor activity, as you can choose when or where to run, your distance and speed, and what terrain - from concrete pavements to country trails. You set your own goals, or just run for fun.



To the mature adult who wants to try running for fitness, please don't be put off by intensive marathon regimes, and there is no obligation to buy expensive Lycra kit! Good footwear is essential though - trainers that fit properly, have good cushioning and good grip (not hard plastic soles). Man-made fibre clothing is preferable to cotton, as it wicks perspiration and feels drier.

So how to start running?

We suggest you follow NHS guidelines, see link: <https://www.nhs.uk/live-well/exercise/get-running-with-couch-to-5k/> this is a brilliant guide you download to your smartphone/headphones, etc. It is free and designed to take you from absolute zero to 'hero' in about 8 - 10 weeks. Suddenly, it makes running 5k (about 3 miles) achievable.

If you plan to run often and extensively then, if you can afford it, consider buying good quality technical running shoes from a specialist supplier, they are not cheap (around £80 upwards per pair), but it will be money well spent on protecting your feet and joints. Running on hard surfaces like concrete is harder on the body than softer surfaces, like off-road paths and grass.

Motivation can be an important factor, so a friend or family member joining you can be a big help.

Sometimes you might not feel like running but with the sense of achievement afterwards, you're glad you did! After a run, do walk around for a few minutes to help avoid muscle stiffness in the legs and carry out stretches recommended on the above NHS website.

Choose a safe local route, whether just round the block or in the park. You might be lucky enough to have a seafront or country paths nearby. It's ok to alternate by running a few minutes, then walking, then running etc. After a few sessions you can build up the running distance. Push yourself a little, but stop if you feel dizzy or unwell. Don't run if you feel dehydrated, nor until around two hours after a meal. For a run of thirty minutes or so there's no need for any special sports diet.

See if there is a Saturday morning Park Run near you (www.parkrun.org.uk), these are regular free 5km (3 miles) events for runners of all ages and abilities. In some coastal parts of our region, they are not run in an actual park but along the seaside promenade, e.g. Worthing, Sussex.

Compared with walking running puts more force onto the bones, so if you think running is for you follow a training programme that gets progressively more intense. This can promote bone growth and strengthen the muscles that absorb more force, as well as associated ligaments and tendons. Rest days are important, your bones need a recovery period to create new cells and adapt to the loads experienced, otherwise stress fractures can occur.

As a regular aerobic activity, running will improve your levels of energy and vitality, body mass, self-confidence and general positivity. It is best to balance running with resistance training such as gym workouts, Yoga or Pilates.

To be fit enough to say "It's a nice day, I'll just pop out and do 3 miles" would be an achievement to be proud of. One day you might even run a 10k race for charity, such as PCaSO! Your body and metabolism would be proud of you.

CHAPTER 3

'Home Gym'

Gardening

Gardening, whether at home or on an allotment, is a physical activity that can improve the flow of blood supply and aid mental health from being outdoors. It can also provide satisfaction and enjoyment as your work can bring colour and beauty into your garden and bring fresh, tasty organic fruit, vegetables and herbs into your kitchen.

Resistance band exercises

Resistance bands are so beneficial and easy to work with that everyone should use them! Gentle resistance exercises such as with the bands are particularly good if you are on hormone therapy and are at risk of bone thinning, as well as muscle loss. The bands are 2-metre lengths of latex that work like elastic bands, for a range of simple repetition exercises. The bands are usually available from sports shops or online and colour-coded for different strengths of resistance. A basic set of 3 bands, being low, moderate or high resistance, is all that is needed. They can be used in or out of doors, or taken on holiday, and used standing or seated. Many of the bands now come with detachable hand grips.

Exercises are available for upper and lower body strength, or core fitness. For individuals who run, walk or cycle, resistance bands can be complementary, by providing the upper body workout that the other forms of exercise might lack.

Regular use of resistance bands for upper body, say for 5 minutes twice each day, can soon tone and strengthen a range of muscles in the arms, shoulders, neck, back and, importantly, the abdomen. This improves posture and provides a sense of greater general health.

A sample set of 'starter' upper-body exercises could be:

- Stand holding one end in each hand with the band's centre under your feet. Pull upwards so your hands are level with your eyes. Repeat 10 times.
- Loop the band's centre around a stout door handle, hold the ends at waist level, stand back so the band is in tension, then pull as if skiing. 10 times.
- Turn round and repeat (2) but as if skiing uphill backwards. 10 times.
- Face the door holding the band in tension at chest height. Pull as if rowing. 10 times.
- Turn round and repeat (4) as if rowing backwards. 10 times.

This writer now does 50 repeats of each type, twice daily. A wide range of suggested exercises is available online, such as on the British Heart Foundation website www.bhf.org.uk As with all exercises it may seem difficult at first so don't over-exert yourself. - but to be effective the exercise should increase the heart rate and breathing. You should soon see benefits, and increase the number of repetitions (reps). There are no 'rules', you could vary the number of repeats or add further elements for core or lower body strength.



Resistance training – suspension systems (e.g. TRX)

TRX is one brand name, but there are various others. In simple terms, TRX suspension training is a system comprising strong webbing straps which can be attached to a suitable fixed hook on the wall or, much more simply for the home user, can be safely slid down the gap between a suitable door and its frame, used for exercising, and then easily removed after the session. It uses gravity and your body weight to allow you to do different workouts.

You're in control of how much you want to challenge yourself on each exercise, because you are able to adjust your body position to add or decrease resistance. It is ideal when you are undertaking rehabilitation from treatment, or when preparing for it.

To start off chose a few different exercises that suit your specific fitness level and needs, do 10 repetitions of each. Remember 10 minutes of activity is much better than nothing at all.

TRX suspension training:

- Delivers a fast and effective total-body workout
- Helps build your core muscle groups
- Increases your muscular endurance
- Is suitable for all levels of ability



Other 'Home' activities

There are many other exercises one can do at home, either without equipment e.g. press-ups, crunches, squats or lunges or with simple inexpensive equipment, e.g. using small weights.

Grip Strength involves both hand and forearm muscles, and is an important area to work on as it tends to get weaker with age. There are inexpensive hand exercisers and massage balls to help strengthen one's grip. Weight training is also useful.



Exercise your pelvic floor muscles

Pelvic Floor Exercises help reduce urinary symptoms in men, to firstly strengthen the pelvic floor muscles in advance of prostate cancer surgery or radiotherapy, and also after recovery from treatment.

Below is a typical guide of what to expect, however, your Doctor or Cancer Nurse Specialist (CNS) should guide you on the specific regime of the exercises they wish you to do.

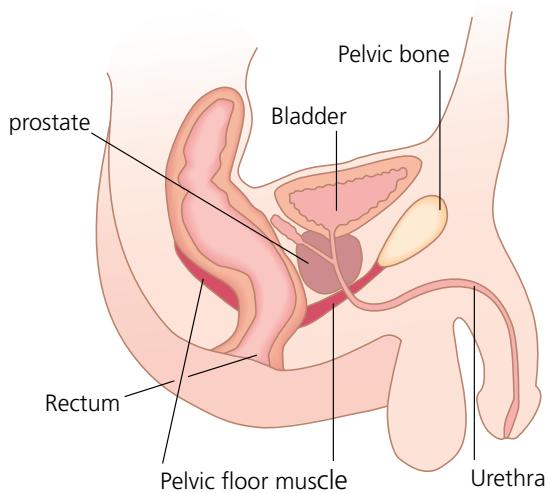
- Either sit upright with your feet touching the floor, or lie down - legs slightly apart
- Tighten and pull up the muscle around your anus (back passage) Imagine that you are trying to stop from passing wind, or to stop your flow of urine mid-stream.

If you are not used to doing them, gradually build up.

Slow exercises, to build stamina:

- Slowly tighten your pelvic floor muscles, hold tight for as long as you can, (up to 10 seconds).
- Rest for four seconds then repeat the slow exercise (up to 10 times)

Fast exercises, to build quick reactions, e.g. to coughs and sneezes



- Tighten your pelvic floor muscles as quickly as you can, hold tight for one second before relaxing.
- Repeat the fast exercise up to 10 times.

Repeat both slow and fast exercises three times per day for several months, to enable your pelvic floor to get stronger so your muscles will be able to work harder for longer. You should still do them once or twice daily, thereafter.

You may have an induction session, be reviewed midway and at the end of the course, after which you might be offered a long-term reduced-rate fee to carry on the good work.

Various facilities may be available to you, including:

- Gym – full, personalised instructions for your course will always be given
- Instructed rehabilitation therapy classes in the pool
- Swimming, and possibly a health suite with steam room, sauna, jacuzzi
- Squash courts, Tennis courts, Badminton
- A variety of classes including specialised referral classes, yoga, Pilates, stretching, weights, etc
- Walking football, and lots more, depending on your local centre facilities.

It might sound exhausting, but you'll be surprised how quickly your fitness improves, and how many other people are also rehabilitating from illness alongside you!

CHAPTER 4

Leisure Activities and Sports

Leisure centres

Leisure centres are vibrant and motivating health and exercise facilities, often run by local authorities. They are not just Lycra and muscle men environments and, particularly at off-peak times, you will be with many others of your own age and fitness level.

If you are a cancer patient, you could see your GP and ask for a referral to a local centre. Dependent on what is applicable in your locality, a GP referral might result in a reduced membership fee, and the major benefit of having a dedicated team of experts who will give you the right instructions on how to use the equipment to aid your pre-treatment, or recovery from cancer treatment.

Swimming

Regular swimming is a great fitness activity that exercises a wide range of muscles, some of which would not otherwise enjoy a workout! There is certainly no age barrier to learning to swim, or returning after many years away. If there is a pool near you, there will probably be lessons for all





abilities, and aqua-aerobics or aqua-fit sessions also. Lessons would help to build confidence in the water, if needed.

Swimming builds cardiovascular strength and improves all the major muscles, not least because water provides around 10 times a much resistance as air - yet without causing undue stress to bones and joints. If you have trouble with walking or running then swimming might be a good alternative for you. There would be a slight trade-off in not contributing to bone density strengthening, but you can complement swimming with say resistance bands exercises at home, see earlier.

Aqua aerobics is an increasingly popular fitness activity for retired people, and even non-swimmers can safely take part in these organised sessions. Aqua fitness is a little more advanced, where participants use weights or resistance bands in the water, and even engage in 'aqua jogging'.

Regular exercise is key, and swimming could be used as one of a number of exercise types - in fact up to triathlon standard, for the very fit! Swimming could contribute to the NHS-approved minimum of 150 minutes per week of moderate exercise.

Swimming would certainly be an enjoyable, varied and satisfying contribution to your exercise portfolio.

Walking Football

Walking football is aimed at keeping people aged over 50 involved with football if, due to a lack of mobility or for other reason, they are not

able to play the traditional game. The sport can be played both indoors and outdoors. Walking football is a unique sport, different to regular Association Football in many ways. Tournaments are now catering exclusively for not only over 50s, but the over 60's and over 70's age groups.

There are 52 rules listed on the Walking Football Association's website, see <https://thewfa.co.uk/>, but the one rule that everyone is agreed on, is that one foot must remain on the ground at all times. "If it looks like running," notes the WFA, "it probably is". Nevertheless, the rule is frequently broken when players get excited and break into a light jog, the penalty for which is a free kick to the other team. Other key rules are - no physical contact between players, over-head height restrictions and indirect free kicks ensure that the sport is played safely with full consideration to the participants' age. Teams are either 5 or 6-a-side, dependent on the size of pitch being used.

As a result of these rules, games are played at a slower pace, often on state-of-the-art third generation (3g) artificial grass pitches (which include some rubber), thus reducing the threat of pain, discomfort and injury, with players briskly walking through matches, maintaining contact with the ground at all times. This allows people who have loved football all their lives to once again safely get back to playing and also introduces the sport to people who perhaps have never considered playing before.



There are now over 1,100 walking football clubs in the UK and 170 teams entered the three age-group categories of the WFA National Cup.

One of the major benefits of taking part in walking football, whatever your ability, is the exercise it provides, played on a regular basis it is surprising how much fitter you can become. While playing a match, which can last anything from 10 minutes to half an hour, you are constantly moving and turning in different directions and this does challenge you physically. It must surely be one of the best cardiovascular exercise regimes with a competitive edge.



Golf

Golf is a popular outdoor sport that can be played by anyone whatever their age.

It can be competitive but can also just be played as a friendly social activity without serious attention to the score. It can be frustrating when you do not do well but challenges you to play regularly, to practice and do better next time! Golf courses are either 9 or 18 holes and most are very picturesque green spaces. Being close to nature golf can be good for mental as well as physical health and can relieve stresses of everyday life. Provided you do not drive around in an electric buggy golf can be a good workout that may support general and heart health. Playing a full 18 holes with a golf trolley can be quite a walk, especially if the course is undulating. If you have not played before enquire at your local golf club. It is advisable to have lessons, at least when you start. Some courses you do not need to be a member, you just pay for a round. However, golf club membership can mean making new friends, playing whenever you like and can include off-course social activities. Some clubs hold 'Golf Days', raising money for charity, including cancer charities.

Gym sessions

If you choose to use a gym, but also do other aerobic activities or sport, then you could focus

your gym work on strength exercises, to build your core, upper-body or lower body. They should be able to advise you at the gym what are the best routines for you.

Pilates

Pilates is increasingly popular but probably little understood by those who don't already practice this mind and body exercise programme. Pilates will develop a range of posture muscles for a healthy back and, importantly for prostate cancer patients, strong abdominal muscles.

The exercises can be tailored to different levels and needs, with new challenges built in with experience. By working to balance both sides of the body, areas of weakness are identified, and those muscles will become stronger with progress. Each Pilates session should result in a sense of being refreshed and invigorated. The exercises are easily built into daily life, and can be complementary to other aerobic activities such as walking, running or cycling.

Pilates can be suitable for all ages and abilities. Look for a beginners' class if you haven't tried Pilates before, and let the instructor know about your condition and any injuries or weak areas. They'll be happy to tailor the stretches to suit your ability. As is always recommended, those with pre-existing health conditions may need to check with their GP before taking up any new or increased form of exercise.



Demonstration videos can be seen on YouTube, and a quick internet search will identify Pilates groups in your area

Yoga

Yoga is not just for women; many men attend the same classes. Although men are usually less flexible, the benefits are equally as good. Yoga, as exercise, is a physical activity consisting mainly of postures, flowing sequences, and breathing exercises, ending with relaxation lying down. Yoga helps to relieve fatigue, build muscle strength and core stability. Flexibility and stamina improve, and it helps sleep quality. The overall purpose of yoga is to connect body and mind so as to engender peace, power and clarity.

To learn correct technique and postures, it is best to attend local classes, before doing some postures at home. Classes are held in some Macmillan Cancer Support centres, some hospital rehabilitation facilities, leisure centres, church halls, schools and dedicated yoga centres.

A good instructor is essential, and an excellent source for finding one, and much more detailed information on yoga, can be found at the British Wheel of Yoga, <https://www.bwy.org.uk/>

All you need to wear are light loose clothes, suitable footwear, socks or bare feet and, once keen, your own soft yoga mat.

There is a special type of yoga called hot yoga, which is carried out in rooms at a temperature of 30° – 50°. Hot yoga has similar benefits to other forms of yoga, but they are further enhanced by the heat. The writer spent three years attending these classes, and would recommend that those who are able to enjoy heat give it a try.

Tai Chi and Qi Gong

Whether you're an 'energetic' exerciser, an 'average' or even a 'sedentary', I wish to share with you an area of exercise that you may well have heard of, but never tried, Tai Chi (pronounced tie-chee) and/or Qi-gong (chee-gong).

This is truly an amazing way of complementing any exercise regime. As a simple explanation - if you held a wet towel in your hand - how would you best dry it?well, as you'll know; wringing it is far better than simply squeezing and this is the secret of how Tai Chi works so well both on and in your whole body - it exercises deep into your muscles, tissues, fibres and ultimately deep into the cells of your body and your essential Lymphatic system. It is also proven to help reduce stress, mental anxiety and has many therapeutic qualities too.

Tai Chi, meaning 'great energy', has its origins over 5000 years ago in China and was originally the foundation of martial arts (Kung Fu, etc). Tai Chi is now refined to be the main exercise of 80% of retirees in China. In addition to gently 'massaging' your whole internal body structure, it is fantastic for maintaining flexibility, balance and keeping all your joints 'well-oiled' too. You can do it standing or sitting down, there is no grade to attain (although there are proficiency levels to aspire to) and you can practise it even in quite a small room. Once you 'attune' to it, you will then feel the holistic benefits too – suddenly you're aware of the breath deep in your body, the birds singing, the waves crashing on the foreshore, the heat of the sun on your body and so much more! It is also proven to help reduce the risk of dementia!

Qi Gong, meaning 'inner energy' goes together with Tai Chi like salt and pepper; Chinese in origin too and even more ancient. Softer than





Tai Chi, it incorporates a more meditative approach. It can be practiced on its own, or more often in conjunction with Tai Chi.

"When I attended the Royal Marsden for my 37 daily Radiotherapy sessions - I always practiced these for half an hour before each treatment and fortunately was one of the lucky ones with absolute minimal side-effects from radiotherapy!

For beginners' keen to learn more YouTube has many 'exploratory/beginner videos, but to really "feel" Tai Chi - it is difficult to learn from just watching a video - an experienced Teacher really is a must. There will be places locally where you can attend, the classes are inexpensive and no special clothing or equipment is needed.

Two recommended books, "Tai Chi for Dummies", and "Tai Chi - Health for Life" by Bruce Frantzis.

For more info - please feel free to contact me. I've been practising for over 7 years now and it is still a joy to embrace it." (Mark Giddings)

Dancing

Last, but not least there are the many forms of dancing. Whereas a slow waltz could be deemed

light exercise, many other dances would fall into the category of beneficial moderate or even vigorous aerobic activity, such as the Quickstep, the Jive or Cha-cha-cha. Dancing can provide excellent aerobic exercise and also contribute to improving balance, posture and flexibility. Dance at home or join a dance class, or, if you have previous experience, dust off your dance shoes and, with your dance partner if you have one, enjoy the music while you dance!

Enjoy a fitness lifestyle

Try out different activities so you can find and develop a personal selection of physical fitness activities that you enjoy and that work for you. They need to be ones that keep you motivated and become over time a natural part of your regular lifestyle.

Hints and Tips:

- Take regular, moderate activity / exercise to safely suit your own circumstances.
- Spend less time sitting down. If weary, get up and do something.
- Being fitter is beneficial for men before treatment, as well as for survivors.
- Target 150 minutes of moderate, or 75 minutes of vigorous activity per week.
- Two days per week of exercise for upper/lower body and core muscle strength.
- Stretches to warm up, and after exercise.
- Keep well hydrated.
- Have a rest day once or twice a week to allow your body to repair.
- Choose your own mix of activities.
- Find what motivates you best.
- Set achievable goals
- Seek an exercise lifestyle you can enjoy
- If you have pre-existing conditions or have had recent surgery, check with your GP before commencing vigorous exercise.

SECTION 4



Technical aspects of Cancer and Prostate Cancer

STOP – this Section 4 is primarily for those prostate cancer patients and survivors who are curious about the science and who want an insight into how cancer, a disease of our cells, develops over time. If you are not curious, or have not been diagnosed with prostate cancer, then we suggest you skip this section.

How Cancer can develop

An overview of cancer risk

Cancer is a 'disease' of our cells. Every day our fantastic immune system, which includes T-cells and B-cells (see Chapter 3) is finding and dealing with pre-cancerous cells in our bodies, so they do not develop into cancer cells, but sometimes a few cancer cells may slip through as they learn to hide from the immune system.

Only about 5-10% of cancers are from inherited genetic factors. In the specific case of prostate cancer having a close relative such as a father, brother or uncle, who has or had prostate cancer, particularly below the age of 60, carries a substantially increased risk for the individual man. Men of African-Caribbean origin also have an increased risk of prostate cancer compared to white Caucasian men.

Studies of identical twins show that a greater risk of contracting cancer is by how they each lead their individual lives, than by their shared DNA. For most people without heredity or other genetic factors, lifestyle aspects can be the largest risk factor allowing cancer to develop and flourish.

Comparison of population studies shows cancer incidence is not the same around the world. Different continents and countries can have marked differences of incidence for specific cancers. Generally, a modern so-called 'Western diet' high in meat, dairy and highly-processed foods, high in sugar, fat and salt, but low in plant foods, is believed to carry a higher cancer risk than a healthier 'Mediterranean diet' or some Asian diets.

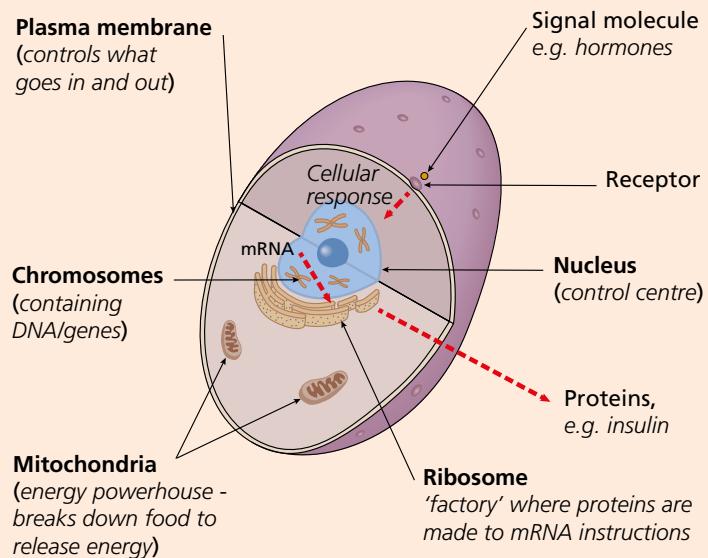
The risk of cancer increases with age and around 75% of all cancers occur in people aged over 60.

'To understand how cancer develops, it is important to know first how cells function and how the body develops and functions normally'

[WORLD CANCER RESEARCH FUND, 'THE CANCER PROCESS']

Basic structure of a normal cell

(many items omitted for simplification)



DNA is our complete 'blueprint' or 'genetic code', that remains protected within the nucleus.

When a signal molecule request to make a protein is received, the specific code (gene) required is copied from DNA to mRNA (by transcription), to then travel out of the nucleus to build amino acids (by translation) which will form the specified protein in the ribosome.

The protein is then sent to wherever in the body is specified

The normal Cell

Cells are microscopic in size but they are complex. We humans are 'multi-cellular', meaning that most cells work together in a scaffolding framework to form molecules, tissues and organs of the body. The outside envelope of the cell is called the *Plasma Membrane* which acts as a barrier and controls what comes in and what goes out. The *Nucleus* is inside and acts as the control centre, it includes *chromosomes* which contain our DNA and its genes. DNA can be considered a 'blueprint' for *gene expression*, which controls the manufacturing process

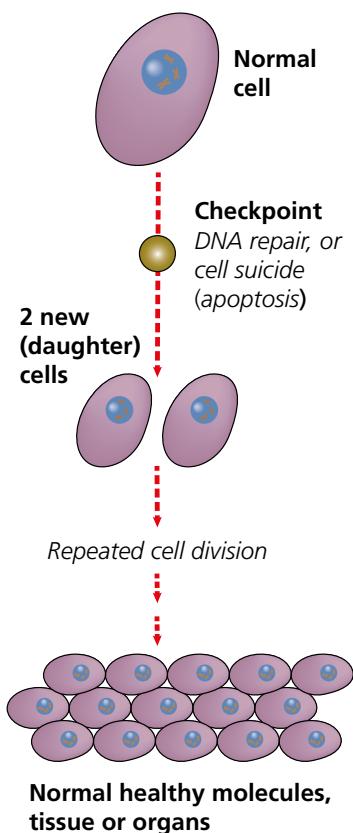
within the cell *Ribosome*, creating amino acids to form specified proteins to be sent outside of the cell. The *Mitochondria* are also important as the 'energy powerhouse', breaking down food to release cellular energy (ATP); as a result of this process potentially damaging 'free radicals' are generated, but they are normally kept in balance. There are *Receptors* on the surface of the plasma membrane that detect chemical signals in the bloodstream and transmit these signals to the interior of the cell. See the simplified diagram on page 55.

Normal Cell Cycle

New cells are continually being created in the body by the process of cell division, so as to:

- enable growth from birth to adult
- heal wounds
- replace old cells.

Normal cell division



There are over 200 types of cells, they each replicate at different speeds, e.g. skin cells and gut cells are replaced very quickly, but some other cells, like nerve and brain cells, take much longer, and some cells are never naturally replaced in adults.

Normally everything about cells is completely controlled with each cell having its own DNA instructions for doing its specific 'job', also instructions for when **to divide** and when **to stop dividing**. The cell division process firstly requires the DNA in the cell to be replicated. Normal progression is monitored at **checkpoints** that sense errors, allowing repair of any defects e.g. DNA damage, before the cells are allowed to divide into two identical (daughter) cells.

For approximately the first quarter of our lives we are growing, from an embryo, through childhood and then to a fully grown adult. Once we are fully grown the growth signals that are generated from our DNA are mostly switched off, but are **not** deleted from the DNA in our cells (this has implications, as developing cancer can turn them on again for its own purposes).

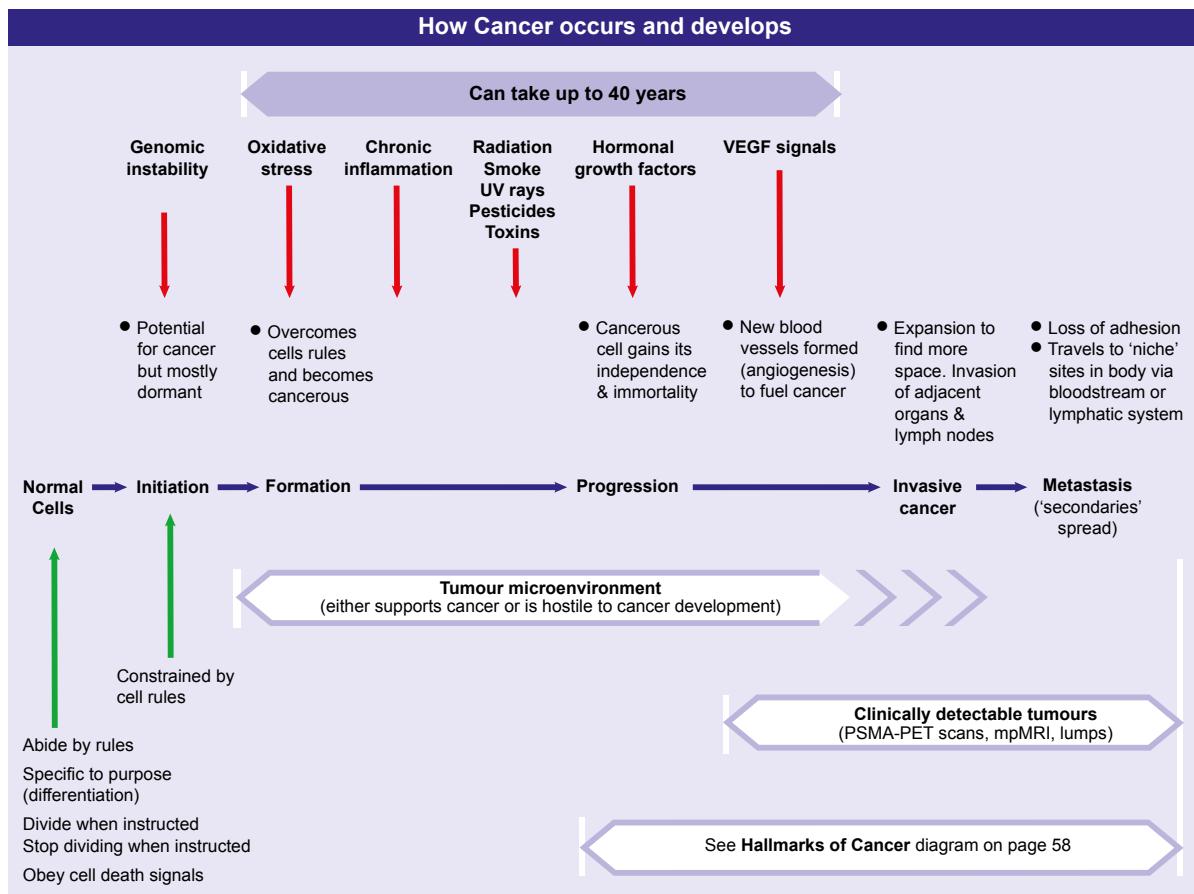
Causes of transformation into cancer cells

See diagram opposite

Most cancers start when a normal cell in the body goes wrong.

There are several reasons why normal cells might be triggered (*initiated*) to develop into pre-cancerous cells (i.e. not yet deemed cancerous):

- natural cell replication – (errors from the copying of billions of DNA instructions. It is these errors that may contribute to ageing)
- environmental influences (e.g. smoking, alcohol, toxins and UV rays can damage DNA)
- genetic inheritance (either specific genes, such as damaged BRCA2, or cumulative small SNP's i.e. mutation of one of the DNA bases)
- viruses (for some cancers, e.g. the HPV virus can cause cervical cancer)



A number of factors influence the development of cancer which can result in the unpicking of all the rules governing growth in the cancerous cell, so the cancer cell can replicate indefinitely and keep growing. The 'tumour microenvironment' can also cause further loosening of the rules so that the cancer cells gain their independence and are no longer respecting the rules imposed on normal cells. This independence means cancer cells are concentrating on their own survival and growth rather than that of the body as a whole.

A cell that becomes cancerous does not care about its 'job' and:

- ignores signals to stop dividing and thus avoids normal cell death
- replicates indefinitely and uncontrollably and can form clumps of cells that become a 'lump' or tumour

- avoids destruction by the immune system and can also 'hijack' the immune system to increase growth of the cancer
- needs more energy so will seek out blood vessels to supply more oxygen and nutrients to feed itself (*angiogenesis*)
- can extend from the original organ to other nearby parts of the body (*invasion*), or travel via the blood or the lymphatic system to more distant parts of the body (*metastasis*). Wherever it ends up it is still cancer from the original organ, e.g. in the case of prostate cancer it can locally invade the lymph nodes, or travel to and colonise the bones, where it is still prostate cancer, not bone cancer.

What defines a cancer cell?

In 2000, two researchers, Douglas Hanahan and Robert Weinberg, wrote a paper about the

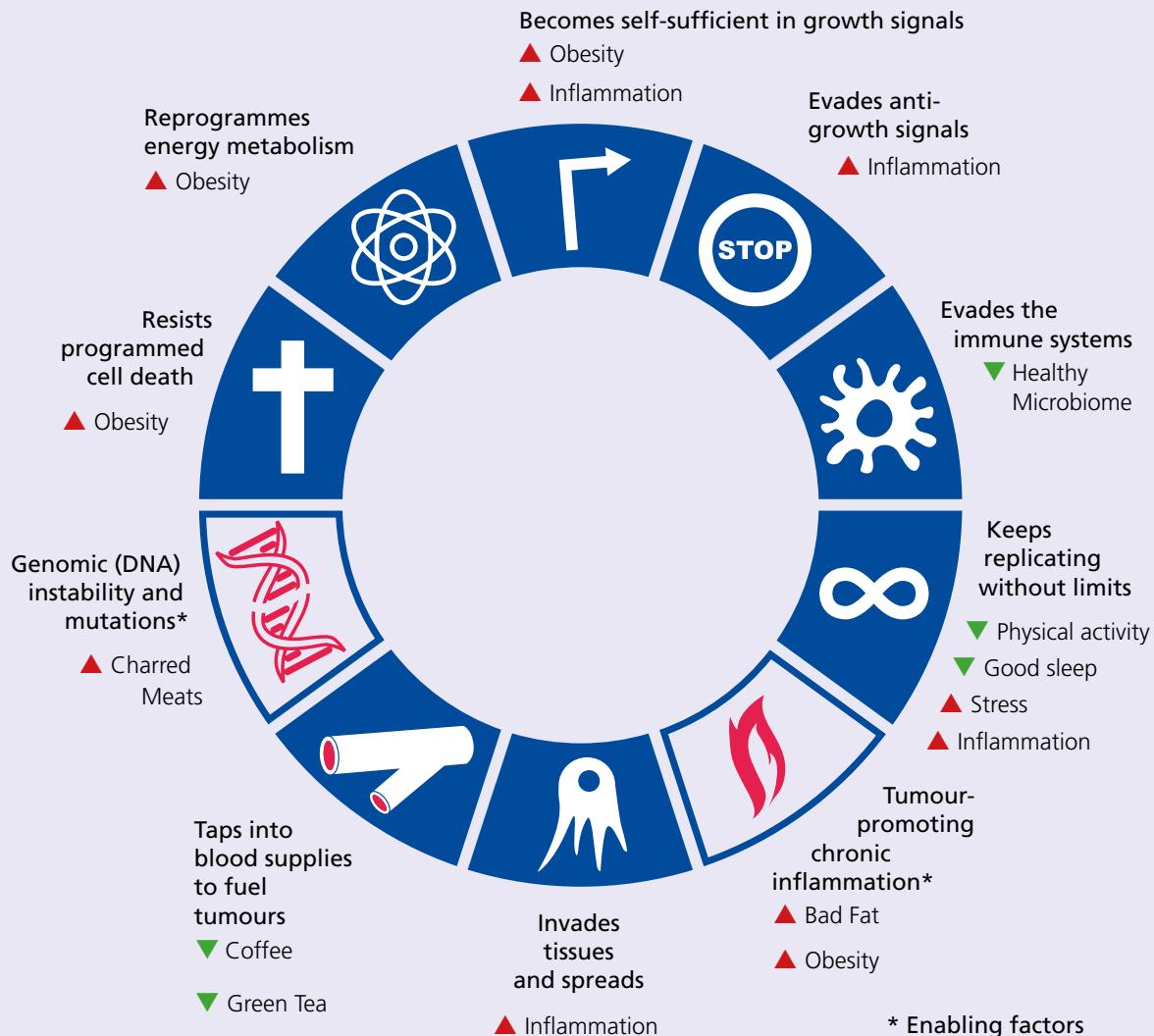
six genetic processes they believed made cancer happen. They called these 'Hallmarks of Cancer' and they added two more to this several years later, and two 'enabling processes', making ten in all. See a diagram below, simplified into 'plain English', rather than

the scientific jargon! [Should you want far more detailed descriptions, see Appendix A of the book 'Anti-Cancer Living' by Dr Lorenzo Cohen and Alison Jeffries, or read online 'The cancer process', by the World Cancer Research Fund].

Hallmarks of Cancer as Influenced by Lifestyle Factors

The simplified diagram below shows eight typical characteristics of cancer (of which there are many types) and two fundamental enabling factors of cancer. The diagram also indicates where lifestyle can impact these hallmarks and enabling factors in either positive or negative ways.

"A wide range of factors related to diet, nutrition and physical activity can influence the processes represented by the hallmarks of cancer" (WCRF 2018 'The Cancer Process').



Extracts from technical papers

Gut microbiome and prostate cancer:

APRIL 2022 (JAPAN)

'Lifestyle, especially diet, plays an important role in the development and progression of prostate cancer. Recent studies have revealed a connection between the gut microbiome and prostate cancer... Additionally, the gut microbiota can serve as a source of testosterone, which affects prostate cancer progression. Men with castration-resistant prostate cancer have an increased abundance of gut bacteria with androgenic functions... Lifestyle modifications can improve the gut microbiome. Furthermore, altering the gut microbiome using prebiotic or probiotic interventions may prevent or delay prostate cancer development.'

For more details see:

<https://pubmed.ncbi.nlm.nih.gov/35388531/>

Egg intake and cancers of the breast, ovary and prostate: a dose – response meta-analysis of prospective observational studies

BRITISH JOURNAL OF NUTRITION - 2015

'Eggs are low in saturated fat and have a high nutritional value supplying high-quality protein, mono- and polyunsaturated fats, vitamins (A, B and D) and minerals (e.g. Fe). However, their high contents of cholesterol ... lend..to a possible role of egg consumption in..sex hormone-related cancers, especially for those whose circulating levels of cholesterol and choline are sensitive to dietary intake of the nutrients. Cholesterol serves as a precursor for the biosynthesis of sex hormones such as androgens and oestrogens that promote cell proliferation, thereby contributing to carcinogenesis of breast, prostate and gynaecological cancers'

'for fatal prostate cancer, an increase of 5 eggs consumed/week was associated with an approximately 47 % elevated risk'

'For total prostate cancer, no evidence of a linear association was found'

For more details see

<https://pubmed.ncbi.nlm.nih.gov/26293984/>

Milk Consumption and Prostate Cancer:

A Systematic Review' WORLD JOURNAL OF MEN'S

HEALTH - 2021

'Dietary choices may play an important role in developing prostate cancer; in particular, a higher dairy product intake has been associated with an increased risk of developing prostate cancer. The overall positive association between milk consumption and the risk of prostate cancer development and prostate cancer mortality has been well documented in multiple epidemiological studies'

'Prostate cancer development may be affected by estrogen levels. It has been suggested that drinking milk may result in increase of estrone and progesterone levels in the blood.'

'A case control study was conducted in Australia to investigate the dietary patterns associated with prostate cancer risk, it was observed that the western pattern diet, which includes high-fat milk was associated with increased odds of prostate cancer risk'

'The overwhelming majority of the studies included in this systematic review were suggestive of a link between milk consumption and increased risk of developing prostate cancer'

For more details see

<https://doi.org/10.5534/wjmh.200051>

Obesity, Inflammation, and Prostate

Cancer FEB 2019 (JAPAN)

'Epidemiological studies have shown that obesity is associated with advanced prostate cancer and that obese men with prostate cancer have a poorer prognosis... Inflammation and immune responses play important roles in the progression of prostate cancer. Other inflammatory cells and immune cells could be also involved in the prostate cancer progression... Another possible mechanism to affect prostate cancer in obesity could be an intestinal microbiome. High-fat diet changes the intestinal microbiome and enhances colorectal cancer and liver cancer.'

For more details see

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6406330/>

SECTION 5

Resources Acknowledgements Glossary of Terms Abbreviations Other Sources



Resources

Information and inspiration

In preparing this first edition of the Healthy Living booklet many sources of information were accessed, either read (books and articles) or viewed (talks or videos) to inform the background, along with the personal experiences and knowledge of members of PCaSO as patients/survivors of prostate cancer. In a number of cases within the booklet specific quotes are made and the source identified within the text. As the science and understanding of healthy living develops PCaSO will seek to improve and update information in future versions of this booklet.

The main sources accessed are listed below and we recommend them for further reading or viewing, for they contain much more information, should you wish to know more. They were inspirational and we acknowledge their contribution to furthering knowledge for cancer patients and for the prevention of cancer and for healthier living. Not all sources agree in all aspects, for much of the science is still developing in what are in many cases complex matters. Some information in books can go out of date and some of the online sources may be either updated, or not always continue to be available.

If you are reading the printed version of this book and wish to access online sources referenced, you may find it easier to use the online version on the PCaSO website and click on the links that you wish to view

Books:

Professor Robert Thomas – Keep Healthy after Cancer. *By Health Education Publications, 2020*

Professor Robert Thomas – How to Live. *Published by Short Books, 2020.*

Dr Lorenzo Cohen and Alison Jeffries - Anticancer Living - the six-step solution to transform your health.
Published by Vermilion, 2018

Kelly Turner and Tracy White - Radical Hope - 10 Key Healing Factors from Exceptional Survivors of Cancer & Other Diseases. *Published by Hay House Inc 2020*

How the Body works - the facts visually explained. *Published by DK, 2016*

Professor Richard Beliveau and Dr Denis Gingras - Foods to Fight Cancer. 2nd Edition.
Published by DK

Chris Woolhams – The Rainbow Diet and how it can help you beat Cancer

New Scientist -Essential Guide No. 9, 'Nutrition & Diet' -The real science of better eating'.
Published 2021

The Man-ual, TrueNTH Exercise and Diet Manual 2016 (*note: this was a publication for a TrueNTH prostate cancer project delivered by the University of Surrey, but was not published commercially*).

Penny Brohn UK - Healthy Eating Guidelines.

Prof. Mustafa Djamgoz & Prof. Jane Plant - Beat Cancer *Published by Vermilion 2014*

Dr Rupy Aujla - The Doctor's Kitchen – Supercharge your Health with 100 Delicious Everyday Recipes – *Harper Collins Publishers 2017*

Websites:

World Cancer Research Fund – i) summary of the Third Annual Report 2018 'Diet, Nutrition, Physical Activity and Cancer', also ii) The Cancer Process, and iii) Energy balance and body fatness

<https://www.wcrf.org/wp-content/uploads/2021/02/prostate-cancer-report.pdf>

<https://www.wcrf.org/wp-content/uploads/2021/02/The-cancer-process.pdf>

<https://www.wcrf.org/wp-content/uploads/2021/02/Energy-Balance-and-Body-Fatness.pdf>

Prostate Cancer Foundation – The Science of Living Well, Beyond Cancer

<https://www.pcf.org/guide/wellness-guide/>

University of California San Francisco – Living with Prostate Cancer – Diet recommendations. https://urology.ucsf.edu/sites/urology.ucsf.edu/files/uploaded-files/attachments/p8-ii-diet_guide_web.pdf

The Association of UK Dietitians – fermented foods. <https://www.bda.uk.com/resource/fermented-foods.html>

NHS alcohol advice - <https://www.nhs.uk/live-well/alcohol-advice/>

NHS alcohol units - <https://www.nhs.uk/live-well/alcohol-advice/calculating-alcohol-units/>

Videos

on the PCaSO website: pcaso.org/videos

Nicky Robinson, Penny Brohn UK – Eating Well with Prostate Cancer – Exploring the Role of Diet and Nutrition

Healthy Living – Exercise - Talk organised by Mid-Sussex Prostate Cancer Support Group

Keeping Active through and beyond prostate cancer – Rosie Sadler, Brighter Outlook

On the Prostate Cancer Research website:

<https://www.prostate-cancer-research.org.uk/living-well-library/>

Their videos are archived in month order:

in [/august/](#)

Building Resilience – Dr Catherine Zollman, Medical Lead, Penny Brohn UK - 4 Aug 2021

Prostate Cancer and the benefits of Physical Activity, Alisa Burke, Physical Activity Lead, Penny Brohn UK - 11 Aug 2021

in [/september/](#)

Dr Daniela Mo, and Mrs Lynda Mallinson, Dietitian - Functional Medicine, Wimbledon:

Contributing factors, Nutritional and Lifestyle Interventions - 13 Sept 2021

Nutritional support during treatment and managing side effects after treatment – 20 Sept 2021

Gut health optimisation, immune system support and living well after treatment - 27 Sept 2021

Further links for Physical Activity and Exercise

NHS exercise www.nhs.uk/live-well/exercise/

British Heart Foundation exercises www.bhf.org.uk

Walking / hiking www.ramblers.org.co.uk

Nordic Walking <https://britishnordicwalking.org.uk/> <https://nordicwalking.co.uk/>

How to start running www.nhs.uk/live-well/exercise/get-running-with-couch-to-5k/

Park Run www.parkrun.org.uk

Prostate Cancer UK – Diet and Physical Activity:

<https://prostatecanceruk.org/prostate-information/our-publications/publications/diet-and-physical-activity-for-men-with-prostate-cancer>

Cancer Research UK <https://www.cancerresearchuk.org/about-cancer/coping/physically/exercise-guidelines>

Yoga www.bwy.org.uk/

Tai-Chi www.nhs.uk/live-well/exercise/guide-to-tai-chi/

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Peter Williamson, professional instructor in East Sussex, <http://nordicwalkingforhealth.co.uk/> for his input to the Nordic Walking content of Section 3 - Physical Activity and Exercise.

Except where otherwise acknowledged this booklet is the work of a PCaSO editorial team of Roger Bacon, Tony Ball, Brian Holden, Lance Allen and Mark Giddings. Comments were also received from David Hurst and Debbie Hatfield.

A number of friends of PCaSO members were invited to read through the booklet drafts, either in part or the whole booklet, and comment from the perspective of someone who had not had prostate cancer. Accordingly we made some changes to improve readability for undiagnosed men, e.g. men attending PSA testing events. We are grateful to our kind friends for their help.

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All other images contributed by members of PCaSO

Glossary of Terms

Acrylamide

Potentially carcinogenic compounds caused by heating starchy food above 120C (but not by boiling).

Active Surveillance

A programme of health checks for men with slow-growing tumours.

Androgen Deprivation Therapy (ADT)

Medium/ long term hormone treatment that reduces the production of testosterone in the body.

Angiogenesis

The ability of cancers to create new blood vessels to nourish the cancer.

Antioxidant

A substance that protects us from the dangerous 'free radicals'.

Apoptosis

The natural death of cells at the end of their life cycle.

B-cells

Cells that create antibodies to neutralise pathogens and toxins.

Circadian rhythm

The body's natural 24-hour clock at physical, mental and behavioural levels.

Cortisol	A stress-related hormone produced by the adrenal glands.
Cytokines	'Messenger' molecules helping the immune system to respond to invasive threats.
Endorphins	Compounds created in the body to reduce pain intensity, and also create a 'feel good' factor after exercise.
Fatty acids	Natural animal or vegetable fats that may be saturated or unsaturated.
Free radicals	Rogue molecules within cells, that can cause damage to DNA.
Immunotherapy	Treatment to help the immune system to recognise and attack cancer cells.
Inflammation	Chronic inflammation can hinder the immune system's effectiveness.
Insulin-like Growth Factor -1	A natural growth hormone in meat and dairy products, that can help encourage cancer cell development.
Lymph nodes	Small organs (nodes within the lymphatic system) that filter and destroy harmful bacteria and viruses.
Macrophages	The 'big eaters' of the immune system, which engulf harmful cells
Metastasis	The spread of cancer outside the primary site, e.g. prostate cancer spreading to bones or lymph glands.
Microbiome	The Gut microbiome is the community of micro-organisms that naturally inhabit the digestive system.
Oxidative stress	An imbalance that inhibits the body's ability to de-toxify, and to repair damage.
Phytochemicals	Natural chemicals in many fruits and vegetables, with a range of benefits including immunity response and reduced chronic inflammation.
Polyphenols	Powerful natural anti-oxidants linked to a range of health benefits including anti-cancer properties.
Prebiotics	A source of food for the gut's healthy bacteria
Probiotics	Good bacteria/yeasts that live in the gut microbiome
Prostate Specific Antigen (PSA)	A 'marker', identified by blood test, that indicates a health issue within the prostate gland.
Psychoneuroimmunotherapy	Applying the study of connections between mind, nervous and immune systems.
Resveratrol	A compound found in the skins of grapes, blueberries, raspberries, also in peanuts.
T-cells	A white blood cell with a central role in the immune system.
Visceral Fat	Toxic abdominal fat that builds up around the organs.
Watchful Waiting	Similar to Active Surveillance but with a lower level of monitoring.

Abbreviations

ADT	Androgen Deprivation Therapy (formerly known as Hormone Therapy)	PCF	Prostate Cancer Foundation (based in USA)
BDA	British Dietetic Association (The Association of UK Dietitians)	PET Scan	Positron Emission Tomography scan
BHF	British Heart Foundation	PNI	Psychoneuroimmunology (study of connections between mind, nervous system and immune system)
BMD	Bone Mineral Density	Pomi-T	Brand name of dietary supplement designed to reduce PSA levels (contains pomegranate, green tea, broccoli and turmeric)
BMI	Body Mass Index	PSA	Prostate Specific Antigen
BRCA2	a gene that corrects DNA damage. Inheriting a variant (faulty) BRCA2 gene means a greater risk of breast, ovarian or prostate cancer, as it cannot repair damaged cells	PSMA	Prostate Specific Membrane Antigen – a protein on the surface of prostate cancer cells
CNS	Cancer Nurse Specialist	PUFA	Polyunsaturated Fat
CRPC	Castration-Resistant Prostate Cancer	SNP	Single nucleotide polymorphism. (A single variation of one of the four nucleotide bases of DNA – A, C, G, or T)
DEXA	Scan for bone mineral density, using two X-ray beams	THR	Target Heart Rate
DNA	Deoxyribonucleic Acid	TRX	Brand name of resistance training equipment
EGCG	Epigallocatechin Gallate	UCSF	University of California San Francisco
FMT	Faecal Microbiota Transplant	UV	Ultra Violet rays (from sunshine)
HDL	High Density Lipoprotein	VEGF	Vascular Endothelial Growth Factor
HPV	Human Papillomavirus	WCRF	World Cancer Research Fund
IGF-1	Insulin-like Growth Factor-1	WFA	Walking Football Association
LDL	Low Density Lipoprotein	WHO	World Health Organisation
mpMRI	multi-parametric Magnetic Resonance Imaging		
mRNA	messenger Ribonucleic Acid. Single-stranded mRNA codes for proteins from DNA		

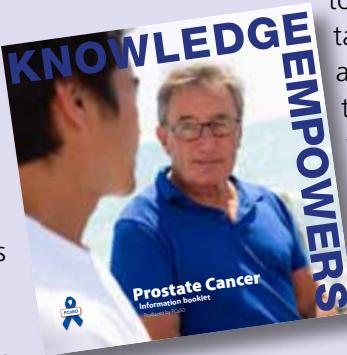
Other Sources of Support and Information

National Federation of Prostate	0800 035 5302	www.tackleprostate.org
Cancer Support Groups (Tackle)		
Prostate Cancer UK	0800 074 8383	www.prostatecanceruk.org
Macmillan Cancer Support	0808 808 0000	www.macmillan.org.uk
Cancer Research UK	0808 800 4040	www.cancerresearchuk.org
Penny Brohn UK	0303 3000 118	www.pennybrohn.org.uk
Maggie's Centres <i>(Royal Marsden Hospital, Sutton. and University Hospital, Southampton)</i>	0300 123 1801	www.maggies.org

PCaSO Publications on www.pcaso.org

KNOWLEDGE EMPOWERS

This prostate cancer information booklet sets out to provide a comprehensive guide, from a patient's perspective, to most aspects of prostate cancer. It aims to help men diagnosed with the disease (and their partners, friends and family) to understand about prostate cancer and its effects in order to have sufficient knowledge



to give them confidence when talking to GPs, hospital consultants and specialist nurses. It is available to view or download at our website
www.pcaso.org

If you would like a free printed copy of the booklet sent to you by post, either email: info@pcaso.org or phone 0845 650 2555 (call rate will vary).

Information Leaflets

A series of information leaflets to guide the reader through different aspects of Prostate Cancer. Available in print and online



Patient Stories

Some men diagnosed with different stages of Prostate Cancer and then having various treatments wanted to share their stories and encourage others to get tested as early as possible. Read their stories and find out why you should have a PSA test: <https://pcaso.org/patient-stories/> or go to pcaso.org then to Information and select Patient Stories

PCaSO Videos

Here we bring together Videos about PCaSO, Prostate Cancer, and recordings of meetings or presentations that we believe will be of interest.

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