



Cancer and exercise

The basics

with Marion Foreman

Online manual

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Section 1 – What is cancer?

We have millions of cells in our body that divide and grow constantly. They usually do this in a controlled way. Cancer starts when cells change abnormally (*information from Cancer Research UK*) and divide in an uncontrolled way. Some cancers may eventually spread into other tissues.

Cancer cells divide rapidly and take up space that they shouldn't. This means that the organ (part of the body) that the cells fill up isn't able to function properly. Sometimes the cancer doesn't affect just one organ; it spreads into other organs and bits break off and lodge in other parts of the body. We don't fully understand why this process starts in some people and not in others. We all have the potential to develop cancer, but it doesn't happen to all of us.

There are many factors that are considered to predispose us to developing cancer. These range from smoking, being overweight and not getting enough exercise, to skin type and sunlight exposure. Cancer can also develop in the absence of any of these factors.

Cancer is not one disease; there are more than 200 different types of cancer. These cancers behave differently and are not always predictable. Survival is dependent on many factors, many of which we will discuss in this course.

One in two people in the UK will get cancer in their lifetime. That is a huge percentage and the chances are that we already know people who have cancer, and as an exercise professional you are very likely to come across at least one client with this diagnosis. Not everyone who gets cancer dies of the disease.

This course will not make you an expert on cancer, nor will it equip you with the skills necessary to run programmes specifically for people on their cancer journey. It will, however, help you to understand what your client is going through and how best you can help.



How does cancer start?

Cells usually divide in an organised way. Cancer grows as cells multiply over and over in an uncontrolled and unregulated way.

The body is regulated by its genetic makeup. Gene changes make one cell or a few cells begin to grow and multiply too much. These cells eventually take up space and interfere with the working of the body. The prompt to make this initial gene change is unclear, but there are many theories and a great deal of work is underway to discover more.

The symptoms are dependent on where the growth/tumour is. It is generally thought that the sooner the cancer is diagnosed, the better the chances of survival as the tumour will have had less opportunity to grow and to spread. The NHS is working hard on early detection, which means that cancers are treated sooner and survival rates are improved. This is shown in the various screening programmes available such as breast, cervix and bowel.

Screening is carried out routinely, but can cause anxiety while waiting for results.

Sometimes people are concerned about their health; they may have noticed something unusual and so visit their GP. It could be a persistent cough, unusual bleeding, a lump, unexplained pain, a change in bowel habits, persistent headache, a changing mole, and many other possible symptoms. The GP has to make the decision whether or not to investigate further. Not everyone who presents with these symptoms has cancer. If the GP suspects that someone has cancer then there is a 'pathway' for the patient to follow. This is a programmed route from GP to hospital clinic with clear guidelines of how long this is expected to take. The expectation is that no one who the GP suspects might have cancer should wait for more than two weeks to be seen at a hospital clinic. This can be an extremely worrying time and your client may not be able to exercise as well as usual. Your role is to support them by letting them lead the conversation and by listening to their fears. While you may hope that all is well, it is not necessarily helpful to tell your client that 'they will be fine' because you don't know that.

Primary and secondary cancer

The place where cancer starts in the body is called the primary cancer or primary site. Cells from the primary site may break away and spread to other parts of the body. These escaped cells can then grow and form other tumours, which are known as secondary cancers or metastases.

Your client might come to you and say they have breast cancer. This means that the main, or primary, site of their cancer is their breast. This cancer might spread or metastasise to other parts of the body. Sometimes these broken off bits are called 'mets'. These mets might embed themselves in other parts of the body, so the cancer might spread to the liver – these are called 'liver mets'.

How cancer can spread to other areas of the body

Cancer cells can spread to other parts of the body through the bloodstream or lymphatic system. There they can start to grow into new tumours.

Cancers are named according to where they first started developing. For example, if you have bowel cancer that has spread to the liver, it's called bowel cancer with liver metastases or secondaries. It is not called liver cancer. This is because the cancerous cells in the liver are actually cancerous bowel cells. They are not liver cells that have become cancerous.

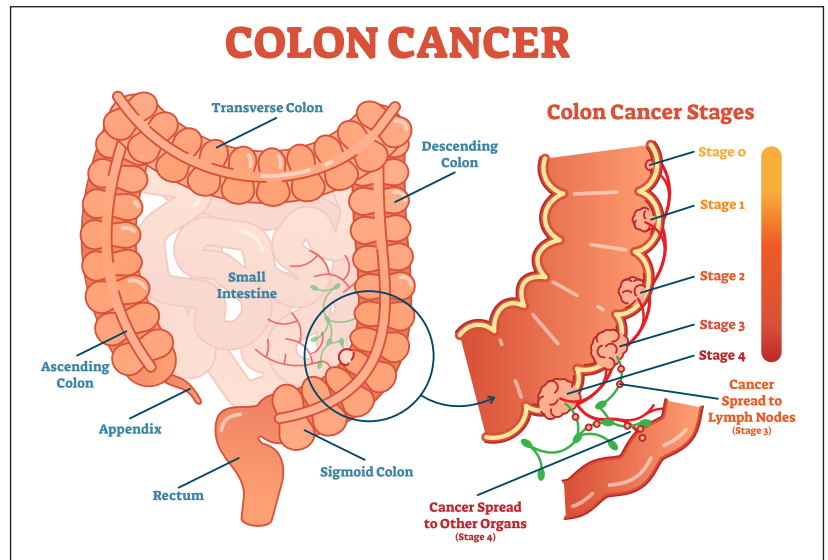
In order to spread, some cells from the primary cancer must break away, travel to another part of the body, and start growing there. Cancer cells don't stick together as well as normal cells do.

They may also produce substances that stimulate them to move.



The following diagram shows a tumour in the cells lining a body structure such as the bowel wall. The tumour grows through the layer holding the cells in place (the basement membrane).

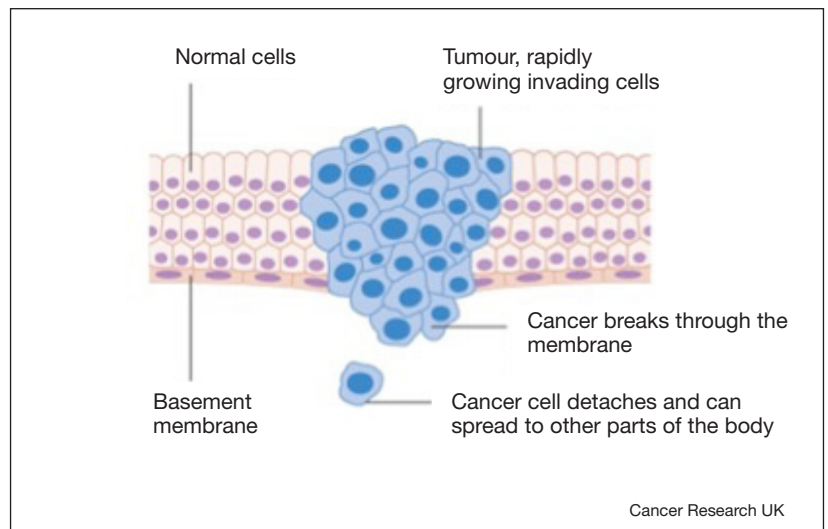
Some cells can break away and go into small lymph vessels or blood vessels, called capillaries, in the area.



Spread through blood circulation

When the cancer cells go into small blood vessels they can then get into the bloodstream.

Then the cancer cell must move through the wall of the small blood vessels and into the tissue of the organ close by. The cell can multiply to form a new tumour if the conditions are right for it to grow and it has the nutrients that it needs.



Through the lymphatic system

The lymphatic system is a network of tubes and glands in the body that filters body fluid and fights infection. It also traps damaged or harmful cells such as cancer cells.

Cancer cells can go into the small lymph vessels close to the primary tumour and travel into nearby lymph glands. In the lymph glands, the cancer cells may be destroyed, but some may survive and grow to form tumours in one or more lymph nodes. Doctors call this lymph node spread.

The ability of cancer to spread is one of the reasons that this disease is so damaging. It is possible to have the primary tumour removed only to find that the cancer has already spread into another part of the body. This spread may not be seen at initial diagnosis and might only become apparent at a later stage. It is this risk of spread that informs decisions on treatment (see Section 2).

If the cancer spreads then, dependent on where it spreads to, further surgery or treatment might be needed. The other issue is that mets might affect functionality. For example, the liver is the powerhouse of the body; if it is affected by mets (made less effective in the way it works), then many functions of the body are affected, such as:

- Blood clotting
- Breakdown and metabolism of fats

- Metabolism of carbs and proteins
- Storage of vitamins and minerals
- Regulation of body heat

(Information from Medical News Today)

Why do we get cancer?

Cancer can't be 'caught' – it's not contagious. There are some lifestyle decisions that mean that we are more likely to develop cancer, such as:

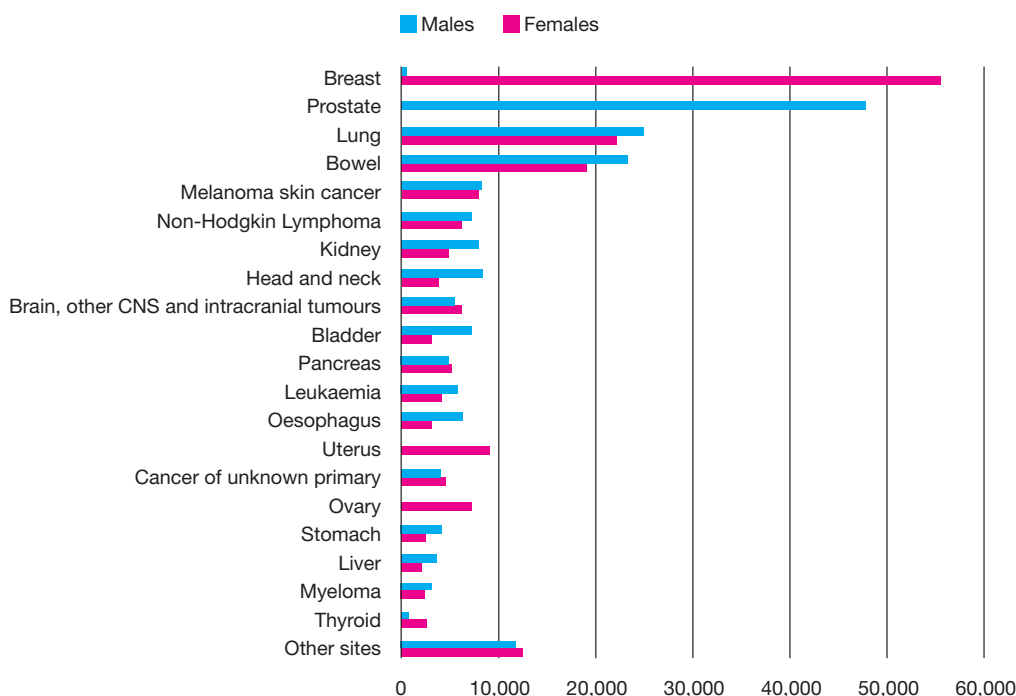
- Being overweight
- Not exercising
- Using sunbeds/getting sunburnt
- Poor diet
- Smoking
- Drinking alcohol
- Being older

Clearly we can do nothing about getting older, but we can lessen our chances of getting cancer by living a healthy lifestyle. As an exercise professional, you are ideally placed to talk to all your clients about cancer prevention.

Common cancers

Breast cancer is the most common cancer in the UK, accounting for almost one sixth (15%) of all cases in males and females combined (2015). The next most common cancers in the UK are prostate (13%), lung (13%) and bowel (12%). Although there are more than 200 types of cancer, these four types (breast, prostate, lung and bowel) together account for more than half (53%) of all new cases in the UK (2015, *Cancer Research UK*).

The 20 most common cancers in the UK (2015)



How do people find out that they have cancer?

There are many ways that we discover that we have cancer. National screening programmes (such as breast and bowel screening) discover some types. Sometimes we find a lump (particularly in the case of breast cancer) or a suspicious mole (skin cancer), or sometimes we notice that something is wrong.

If we suspect that something is wrong, we go to our GP. The GP will take a history (that means listening to our story) and will make a decision on whether to investigate further. This will mean an appointment in the hospital within two weeks of seeing your GP. The GP might take a blood sample so that the results are available in advance (there are some cancers that give rise to blood results that can indicate the severity of the disease). The hospital doctor will examine you and request the most appropriate further tests. These might be biopsies (taking small samples of the lump) or scans.

The results of all these tests are put together and a diagnosis is made. The patient is discussed at an MDT (Multiple Disciplinary Team) meeting where all the doctors involved in the care of the patient get together and plan the best course of action. This decision is discussed with the patient and then the treatment starts.

This time can be very stressful and upsetting. Your role with your client here is one of support and continuing concern for their general health and well-being. Ask how they are and leave the conversation to them. Try not to shy away from them, but also don't become intrusive. People cope with things differently and will therefore need different things from you. It is important that you retain your professional boundary (see Section 5).

At this stage, your client can continue to exercise unless they have symptoms that are affecting them. If they are in pain, then you will need to avoid making the pain worse. It is not appropriate to tell the client to take analgesics (painkillers) before they come to workout with you. This would lead to masking the pain and has the potential to cause problems for the client. If they feel unwell, you will need to adapt their programme appropriately. This will mean fewer reps, more rest, and lower CV. It will also mean that the amount of weight they can manage will be significantly lower. This might add to the stress that your clients are feeling.

Section 1 – Self-assessment questions

1. What is cancer?
2. What ratio of people get cancer in the UK?
3. What lifestyle factors increase the risk of developing cancer?
4. What is the 'two-week wait'?
5. What is metastasis?
6. What does the liver do?
7. What is the most common cancer for women?
8. What is the most common cancer for men?
9. What three ways can cancer spread?
10. How would you know if you have cancer?
11. What would you do if one of your clients said that they think they might have cancer?

Section 2 – Cancer treatments

How treatments are planned

Cancer describes many different types of illness and, depending on where the cancer is, the treatment will be different.

Once a diagnosis of cancer has been confirmed, there are pre-determined ways that treatment is planned and delivered.

Cancer is often confirmed by histology (the examination in a laboratory of the biopsy/specimen that has been taken) and/or by a scan of some sort. Biopsies are taken in a number of ways, dependent on the place of the tumour. A gastroscopy will look down into the stomach, a colonoscopy up into the lower bowel, a uroscopy up into the bladder, and a colposcopy up into the uterus (womb). When looking in these areas, a biopsy will be taken of anything suspicious.

Once the diagnosis has been confirmed, the MDT will meet and plan the best treatment. This is dependent on many factors, including:

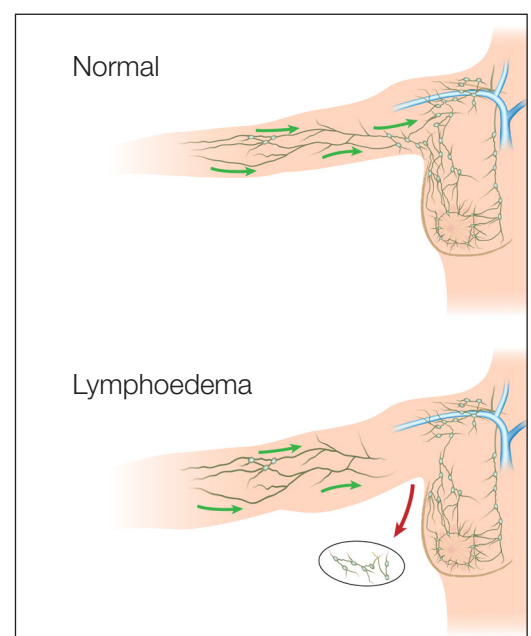
- Type and site of cancer
- Pathway (usual plan for this type of cancer)
- General health of patient

Surgery

Obviously this is dependent on where the cancer is. If we look at the most common cancers:

Breast – this can vary from lumpectomy (removal of just the lump) to mastectomy (removal of the breast) and possibly include reconstruction. Reconstruction involves taking muscle from another part of the body (usually stomach or back) and placing it where the breast used to be. There are then two surgical sites to heal and to be considered.

Under arm – one node might be removed from under the arm to see whether there is any spread and, dependent on that, more lymph nodes might be removed. This can cause significant concern for the patient and it is often necessary to help and encourage movement in that arm. Removing lymph nodes also removes lymph channels so that the lymph cannot flow back as easily. If the lymph doesn't flow back, it can pool in the arm. This is known as lymphoedema. Encouraging movement will help to establish new paths for the lymph to travel back and will help to disperse the lymphoedema.



Prostate – a radical prostatectomy removes the tumour, which is under general anaesthetic. There might also be a need to remove some lymph nodes if they are affected by spread (see Section 1).

Lung cancer – this surgery is very dependent on the type of lung cancer and amount of spread. Various options include single lobe removal or removal of one lung.

All surgery will result in areas of weakness and it's important that any exercise takes account of this.

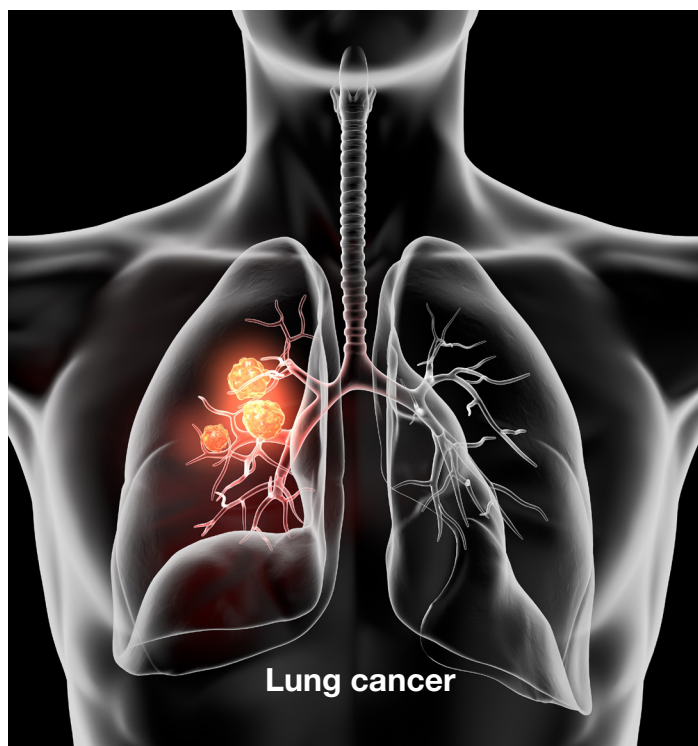
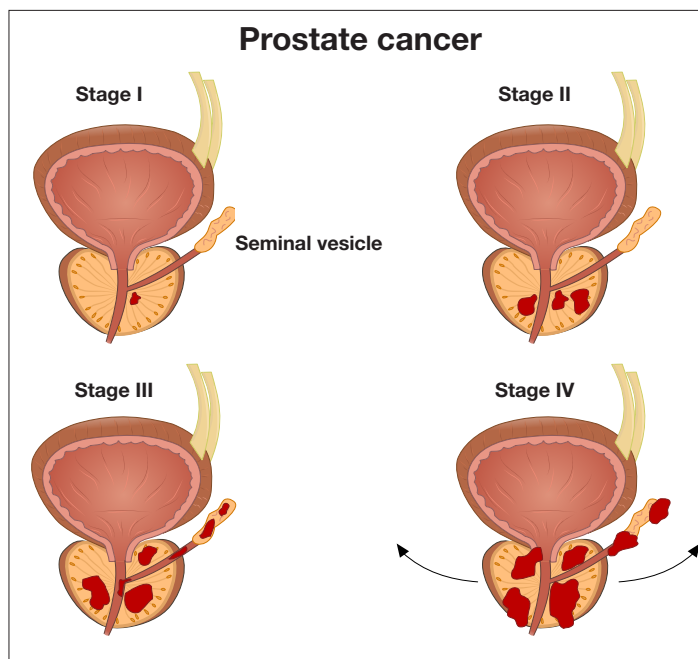
Before starting any exercise, it is very important that the client has had the 'go ahead' from their surgeon. The wound needs to have healed (no sutures/clips or infection). Hopefully the client will have been seen by a physio who will have suggested some exercises. In the first instance, just follow these. If you have any doubts at all, write to the surgeon (template letter at end of Section 5) and ask for the go-ahead to exercise. In this letter, outline your plan so that they know what they are agreeing to.

It is very important to start slowly and gently. Surgery is a major assault on the body and muscles need to repair, as does the skin. Of course, if the client was fit and healthy before this all began, then they will be able to get back to full movement more quickly.

Pain is always an important consideration. It is very important that we (as exercise professionals) are very aware of any pain. Pain should be the main indicator to stopping exercise. It is important that you should know whether your client has taken painkillers or is taking therapeutic steroids. Steroids can make people think that they can do more than they actually can. Taking painkillers (analgesics) before exercise can mask pain and there can be a tendency to do more than is sensible.

After major surgery, exercise will consist of walking short distances and moving from sit to stand effectively. It is important to encourage the client to keep their arms moving, but following breast reconstruction there will be limitations (see Section 4).

Some clients might have support garments – make sure these are worn while exercising.



Chemotherapy

Chemotherapy (chemo) is often given after surgery and is used to clear up any cells left after surgery, and any spread into the body that has occurred (see Section 1). Sometimes chemo is given before surgery so that the tumour is smaller before any surgical intervention.

How chemotherapy kills cancer cells

Chemotherapy circulates throughout the body in the bloodstream, so it can treat cancer cells almost anywhere in the body. This is known as systemic treatment. Chemotherapy kills cells that are in the process of splitting into two new cells.

Some drugs kill dividing cells by damaging the part of the cell's control centre that makes it divide. Other drugs interrupt the chemical processes involved in cell division.

Why chemotherapy causes side effects

The fact that chemotherapy drugs kill dividing cells helps to explain why chemotherapy causes side effects. It affects healthy body tissues where the cells are constantly growing and dividing, such as:

- Hair, which is always growing
- Bone marrow, which is constantly producing blood cells
- Skin and the lining of the digestive system, which are constantly renewing themselves

As these tissues have dividing cells, chemotherapy can damage them; this is why people who are having chemo often lose their hair and their nails become damaged. In time, normal cells will replace or repair the healthy cells that are damaged by chemotherapy.

The damage to healthy cells doesn't usually last. Most side effects disappear once treatment is over. Some side effects such as sickness or diarrhoea might only happen during the days when people are actually having the drugs. However, these side effects can be devastating and can cause a great deal of stress. While hair will grow back, it is often not the same as it was before (often coarser and very curly).

Peripheral neuropathy can occur; this means that fingers and toes don't feel things like they used to resulting in altered sensation. When this occurs, it can be hard for your client to pick things up and, importantly, balance can be impaired. It is important to take this into account and to be very aware of your client's movements.

All these factors can combine to make your client feel less confident in themselves and in their body. It is our role to encourage them to 'regain' their body and to take control of it again. At the end of treatment, it is easy for the client to feel that, because so many people have had a 'go' at so many parts of their body, it doesn't belong to them anymore.

Main types of side effects:

- Tiredness
- Nausea and vomiting
- More likely to get infections (because the immune system has been affected by the chemo)
- Loss of hair
- Peripheral neuropathy (changes of feeling of sensation in hands and feet, which can affect balance)
- Chemo brain – a general feeling of being a bit 'foggy'

Chemotherapy is very toxic and can be very difficult for your client.

Immunotherapy

Immunotherapy is a standard treatment for some types of cancer, for example melanoma that has spread, and it is in trials for other types of cancer.

What it is

Immunotherapy uses our immune system to fight cancer. It works by helping the immune system recognise and attack cancer cells.

Some types of immunotherapy are also called targeted treatments or biological therapies. Immunotherapy can be given on its own or with other cancer treatments.

The immune system

Our immune system works to protect the body against infection, illness and disease. It can also protect us from the development of cancer.

The immune system includes the lymph glands, spleen, and white blood cells. Normally, it can spot and destroy faulty cells in the body, stopping cancer developing. However, cancer might develop under the following circumstances:

- The immune system recognises cancer cells, but is not strong enough to kill them
- The cancer cells produce signals that stop the immune system from attacking it
- The cancer cells hide or escape from the immune system

Side effects of immunotherapy

These drugs boost all the immune cells, not just the ones that target cancer. So, the overactive T-cells (that govern the immune reaction) can cause possible side effects. These might include:

- Tiredness (fatigue)
- Feeling or being sick
- Dry, itchy skin, skin rash
- Loss of appetite
- Diarrhoea
- Breathlessness and a dry cough, caused by inflammation of the lungs

Adjuvant therapy is additional therapy given to some patients to reduce the risk of reoccurrence.

Radiotherapy

Radiotherapy means the use of radiation, usually X-rays, to treat cancer cells. Radiotherapy can be used to try to cure cancer, reduce the chance of cancer coming back, or to help relieve symptoms. It might be given alone or with other treatments such as chemotherapy or surgery.

Nearly 50 out of 100 people have radiotherapy at some point during their cancer treatment.

Radiotherapy can be given:

- From outside the body as external beam radiotherapy
- From inside the body as internal beam radiotherapy

Radiotherapy works by destroying the cancer cells in the treated area by damaging the DNA of these cells.

Side effects of radiotherapy

Tiredness and weakness:

- Most people feel tired while they are having radiotherapy, particularly if they are having treatment over several weeks, as the body is repairing the damage to healthy cells (or tiredness can be due to low levels of red blood cells – anaemia)
- Weakness occurs and your client might feel as though they don't have the energy to do their normal daily activities; this may last for a few weeks after the treatment ends
- It can also be exhausting as radiotherapy involves daily trips to the hospital, which can be tiring in itself
- You can help by encouraging a realistic amount of exercise – this might just be getting out for a walk and explaining the benefits of sleep and a healthy diet

Sore skin:

- Some people get sore skin in the area being treated – the skin may look reddened or darker than usual, it may get dry and itchy, it may break, or small blisters can start to form in the area
- Avoid doing exercises that will exacerbate any skin irritation

Loss of hair in the treatment area:

- Radiotherapy makes the hair fall out in the treatment area (hair in other parts of the body is not affected); the hair should begin to grow back again a few weeks after the treatment ends

Exercise for people undergoing treatment

There is a difficult balance to be struck here. On the one hand, people on treatment shouldn't necessarily sit about, but many will feel really tired and possibly nauseated. Some pain may also be present from surgery. As you get to know how your client is responding to treatment, you will be able to respond in a way that will help. It might be that sometimes it is all that your client can do to get in to see you; that will do just fine. You may need to offer shorter sessions and you will certainly need to drop the intensity. For some people on their cancer journey, it is a major achievement to just get up and go for a walk. It is imperative that you, as a PT, support and encourage them to do what they can.

Section 4 will help you to plan a programme. Be prepared to listen to the anxieties of your client, but remember that all health issues should be taken to their GP or consultant. The conversation should be led by the client. Let them tell you as much or as little as they want to. Encourage movement; it might just be a walk on the treadmill. Reassure them that their strength will return. Don't push too hard, but encourage any movement that can be managed.

Section 2 – Self-assessment questions

1. What are the most likely treatments for cancer?
2. Why does hair fall out when people are having chemo?
3. What does radiotherapy do?
4. What is the impact of peripheral neuropathy on a client?
5. How can you help to relieve lymphoedema?
6. What would you do if a client felt sick?
7. How do the clinicians decide what to do for each patient?
8. Do you think people with cancer should rest all the time?
9. If a client of yours was having surgery for breast cancer, what would you consider?
10. Where is the prostate gland?

Section 3 – Benefits of keeping fit

It is well known that leading an active lifestyle has benefits in many areas.

Exercise can help to:

- Reduce the risk of some cancers
- Manage weight and therefore reduce the risk of type 2 diabetes
- Improve mood and combat some mental health diseases
- Improve energy levels by boosting endorphins
- Reduce the risk of dementia
- Maintain mobility and therefore reduce risk of falls and fractures (especially in older people)
- Maintain bone density
- Help with socialisation and confidence

Of course, it's not just exercise alone – maintaining a healthy diet is also important, as is sleep and stress management. An excellent resource is Dr Chatterjee's book, *The 4 Pillar Plan*. He looks at how to relax, eat, move and sleep. Many of his principles can apply to all of us, including people on their cancer journey. He suggests that a varied diet (for him, based on eating many colours of food), adequate sleep, time to relax, and time to move are the cornerstones of a healthy life. Dr Chatterjee's advice in particular is to avoid processed foods and be really disciplined about time for oneself; important points that you might like to share with your clients.

It is important to consider here what we mean by exercise. For some people, this might mean getting out of the house and going for a walk. For others, it might involve some resistance work. It is imperative to learn to deliver person-centred exercise programmes and that one size does not fit all.

As exercise professionals, it is important that we understand some of the mechanisms behind these recommendations. Looking in this section at cancer prevention we can understand more how exercise helps.

How does exercise and being active help prevent breast cancer?

Being active can affect the levels of some hormones in the body. Hormones are chemical messages that are carried around our bodies to tell different parts what to do. Oestrogen and insulin are both hormones.

Cancer starts when cells divide too much and multiply out of control. Oestrogen could encourage cells in the breast to divide more often. Activity can reduce the levels of oestrogen, helping to prevent breast cancer.



Insulin could also affect how cells multiply. Being very active can reduce levels of insulin and help prevent cancer (*Cancer Research UK*).

How does exercise and being active help prevent bowel cancer?

The bowel is part of the digestive system, processing food that is ingested. The bowel also processes waste that passes out of the body as faeces.

Being active helps move food through the body. This reduces the amount of time any harmful chemicals in food waste are in contact with the bowel, helping to prevent cancer. Being active also helps control levels of inflammation in the bowel. Inflammation is a normal way that our bodies respond to damage, but if there is too much, it can cause cells to multiply more often, increasing the risk of cancer. So, being active can help prevent bowel cancer by reducing the levels of inflammation (*Cancer Research UK*).

How does physical activity benefit people on their cancer journey?

There are no general UK guidelines about exercising after cancer, but several studies have shown that exercise is safe, possible and helpful for many people with cancer.

Professor Thomas is an oncologist working at Bedford Hospital and at Addenbrooke's in Cambridge and, in his book, *Lifestyle and Cancer*, he quotes two studies in particular in relation to the benefits of exercise. One was carried out in Melbourne from 1990 to 1994 involving 526 people, and another study was carried out in the USA. Both showed lower rates of return of the cancer and longer life in those who exercised regularly. A study presented in 2010 at the Frontiers in Cancer Prevention Research conference described how men with prostate cancer who exercised for four hours a week had lower mortality rates than those who didn't exercise.

In general, it recommended the same level of activity for people with cancer as for the general population (*Cancer Research UK*).

How exercise can help

Exercise can improve quality of life and general sense of well-being. Some studies show that it can help to speed up recovery after cancer treatment. Regular exercise can reduce stress and improve energy levels (*Cancer Research UK*).

Mood

One research study found that women who had had breast cancer were less likely to be anxious or depressed if they exercised for half an hour, four times each week. The sooner the women started their exercise after their cancer treatment had finished, the better they felt. Studies suggest that up to four out of 10 women are depressed a year after their diagnosis, so exercise could be helpful for this (*Cancer Research UK*).

Fatigue

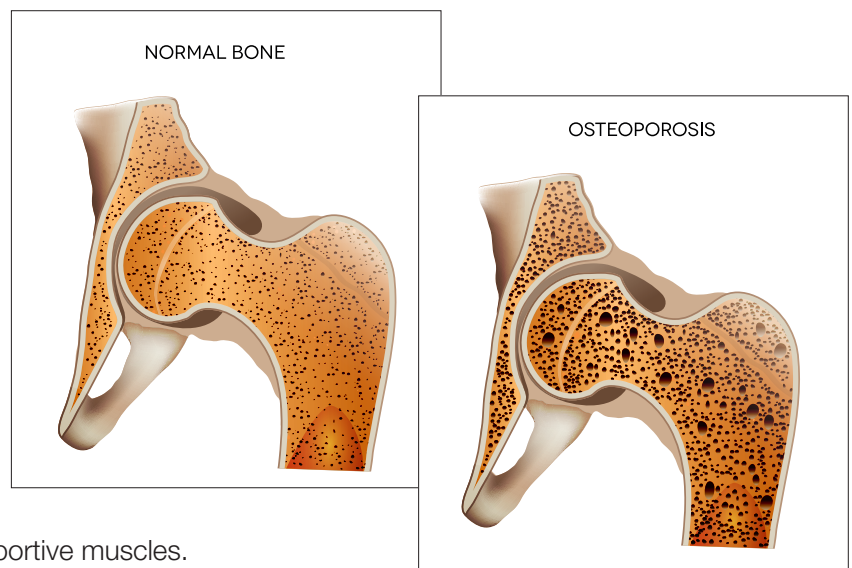
Some studies have looked at whether exercise could help lower tiredness (fatigue) during cancer treatment. In one study, researchers recruited 38 people having radiotherapy for either breast or prostate cancer. They asked half of them to follow a programme of moderate, home-based exercise. After four weeks, the exercise group were doing more than the 10,000 steps recommended for healthy people.

One study introduced an exercise programme for people in hospital having intensive treatment. Those exercising were fitter at the end of the study and had less tiredness (*Cancer Research UK*).

Osteoporosis

Osteoporosis (bone thinning) is a concern for all post-menopausal women, but especially for those whose cancer is hormone dependent and therefore cannot take hormone replacement therapy (HRT). These women should be encouraged (where possible) to undertake weight-bearing exercise such as running and rowing.

Osteoporotic bones are more likely to break, so exercise to improve bone density is important to maintain strong, supportive muscles.



Red flags

Abdominal strain

Many people who have had cancer of the digestive tract may find it uncomfortable to do exercises for the abs and will need to build up slowly. Similarly, those who have had gynae cancers will want to be cautious about abs exercises, but also may feel that they want to regain control of those areas and of their pelvic floor. Much of the work of a PT is about helping the person on their cancer journey to regain control of their body and feel that their body belongs to them. This is achieved through comprehensive assessment, liaison with oncologist/surgeon/GP, and working closely with the client to assess capability and tolerance.

Cancer affecting bones

If your client's cancer has spread to their bones (bony mets), they will be at a greater risk of a fracture. You must avoid putting too much strain on the affected bones. These clients are at great risk from exercise and a cautious approach is imperative. If they are able to walk (and are not in great pain), the best form of exercise is likely to be swimming and/or exercise in water. Seated yoga led by an appropriately qualified teacher is usually safe. It is vital that you, as their PT, are aware of the amount of bone involvement before you consider any exercise at all. This is likely to be a very difficult time for your client and it is important that you work closely with them and don't appear to 'abandon' them at this stage. You may only be able to go for a walk together.

Low immunity

People with low immunity due to treatment need to avoid exercising in public gyms. Our immune status is how we fight off disease. If this has been lowered by chemotherapy, then your client is very prone to catching any infection and will have been told to avoid crowded areas generally.

Peripheral neuropathy

Some people have loss of sensation, or feelings of pins and needles in their hands and feet due to cancer treatment. This is called peripheral neuropathy. This can affect balance significantly and the ability to lift things such as weights. This means that weights will have to be lower and handled carefully. It also means that you will need to be extra vigilant watching your clients when they are doing standing and stepping exercises. Having said that, the best types of exercises are those that encourage strong leg muscles to enhance stability. If you are working in a gym, then the static bike might be a good source of CV for this client group.

Breast cancer

Women with breast cancer can do upper-body training, but it should be done very slowly and with gradual progression. This is really helpful to reduce lymphoedema. Lymphoedema occurs when lymph nodes have been removed. Lymph nodes are part of the lymph system. The lymphatic system is a network of tissues and organs that help rid the body of toxins, waste and other unwanted materials. The primary function of the lymphatic system is to transport lymph, a fluid containing infection-fighting white blood cells, throughout the body.

The lymphatic system primarily consists of lymphatic vessels, which are similar to the circulatory system's veins and capillaries. The vessels are connected to lymph nodes, where the lymph is filtered (*livescience.com*). If a significant number of lymph nodes are removed from an area (due to disease spread), then the lymph cannot return effectively and will 'pool' in the affected limb. This gives rise to swelling. The solution is compression hosiery and exercise. Exercise will help to force fluid to make new channels to flow back through.

When to get your clients started on exercise

If they are having treatment or have recently finished, it's fine to start exercising if they feel like it. How much they do really depends on how fit they are generally. Bear in mind that your client is possibly feeling generally tired and might be struggling to manage everyday life. While we know that exercise will help with this, it can feel like just another chore to do. If your client has been with you for some time, you will be very familiar with their exercise tolerance. They will not, of course, be able to come straight back to the level that they were before. Start gradually, lower the weights and the reps. Keep the CV gentle and progress slowly. Be very aware of the tumour site, the surgery, and any side effects that they might be dealing with.

Be particularly cautious if your client is taking steroids. Prescribed steroids can make the person feel full of energy.

The person can also feel as if they can do more than they actually can and this can be to their detriment.

Read more about exercise planning and red flags in Section 4 (*Cancer Research UK*).

Supplements

People on their cancer journey often ask about supplements. It is beyond the scope of an exercise professional to recommend any specific supplements. However, a good reference source for your client is, again, Professor Thomas' book. He recommends a product called PomiT (cancernet.co.uk/pomi-t.htm), which is a capsule containing green tea, pomegranate, broccoli and turmeric. These are rich in polyphenols, which are associated with reduction in chronic diseases such as cancer. They are also antioxidants, which help to combat the effects of cancer cells.

Section 3 – Self-assessment questions

1. What four ways can exercise help people with cancer?
2. What other factors help people with cancer to live a healthy lifestyle?
3. Why do you need to know what surgery a client has had?
4. What is the impact of lowered immunity on your client?
5. What is peripheral neuropathy?
6. What is lymphoedema?
7. How can you help a client with lymphoedema?
8. Why are you cautious if your client is taking steroids?

Section 4 – When to stop

In this section, we are looking at anything that might give you cause for concern, and areas that should raise the alarm for you.

These issues all come from the work of Professor Thomas. It is your responsibility to know your client well and to plan a suitable exercise session. It is also your responsibility to immediately spot anything that is out of the ordinary for the client that you are working with.

Make sure that your insurance covers you to work with people who have cancer.

This all begins with a thorough initial assessment. In this, you need to discover what is happening to your client; whether it is an update on someone that you know well or whether it is a new client.

As well as the basics of name, age, date of birth, next of kin, and emergency contact details, you need to know the contact details for their GP and consultant.

Ask where their primary cancer is and whether it has spread, and if so, where to. Ask about surgery and what they have had done and when. If you don't understand what they have had done, look it up – do not pretend you know

or attempt to 'wing it' – it won't work for this client group and could be very dangerous.

Find out what treatment they have had/are having and any side effects.

If you are able to take their blood pressure, do so.

Ask whether they have any other health conditions.

Find out their previous activity levels and what they are hoping to achieve going forwards.

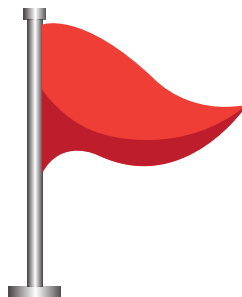
Ask about pain and whether they are taking any painkillers.

All of this information should be recorded and then stored safely and securely, but somewhere that you can access it easily. There is a template assessment form after Section 5.

This is the right time to check any concerns with their Health Care Professional (HCP). DO NOT start an exercise programme if you have any concerns at all; wait for the reply from the HCP. There is a template letter after Section 5. Wait to get a reply before you start. If you find that the HCP is not replying, then the best way to get a response is to ask your client to contact their GP surgery or hospital directly and request a reply.

Issues that should always raise doubts and halt exercise:

- Joint pain that is new
- Bone pain, especially in the back
- Unexplained weakness, especially on one side of the body and/or face
- A seizure/fit
- Fainting
- Sudden onset of confusion or disorientation
- Chest pain
- Loss of sensation
- Headache – unusual and intense
- A hot and swollen limb
- A high temperature
- Pain that is new or more intense
- Bleeding from anywhere
- Swelling anywhere
- Pallor, dizziness
- Sudden onset of a cold/pale limb



What to do:

- Stop the exercise
- Sit your client down
- Lay the client down if the situation doesn't immediately improve
- Raise the client's legs
- Call for help if you are concerned because the client isn't feeling any better
- Call for help if your client has a fit/seizure
- Call for help if your client continues to bleed

- Call for help if your client has chest pain
- Call for help if your client is confused
- Call for help if your client has a sudden onset of weakness on one side
- Call for help if the pallor to one limb persists:
 - if you are in a gym, inform another member of staff who is first aid trained
 - if alone, call for an ambulance
 - call for an ambulance if you are concerned
- When the ambulance arrives, tell them all that you know about the client
- If the problem is less severe and the client is able to go home, you should recommend that they see their GP or go to the hospital, and explain that you are unable to workout with them until the situation is resolved
- Check on your client the next day
- Document the event and your actions taken

It is imperative that you understand what is happening to your client to keep them safe. If you don't know, ask their GP. It is very important that you obtain your client's permission to write to their GP or oncologist. It is best practice to show your client the letter before you send it.

Safe exercises

It is important to remember that people with cancer are very diverse. They could be any age and everyone is affected differently by a whole range of cancer types. Dependent on their treatment and surgery, they will have a different exercise potential.

The imperative is to get to know your client. If they are not already known to you, find out what you can. Complete the assessment form and work from there. Find out their usual level of exercise and plan from that point.

Be particularly careful after surgery, especially for the first six months. The surgery site will be healing, as will the muscles and skin under the incision. Remember that even if the surgery was done 'laparoscopically', meaning that there are very small incisions, it doesn't mean that it was a small surgery; there will still be a great deal of surgery underneath. Check with their HCP/GP/surgeon that they are happy for your client to exercise – this will not be until they have had their post-surgery check-up.

As a rule of thumb:

- Use light weights
- Do not work to failure
- Ask for low numbers of reps
- Keep CV to a manageable level – so don't push to exhaustion
- Be mindful of the area of surgery and keep all exercises to low intensity for the first six months, then build slowly
- Ask whether they have had any exercises given to them by a physiotherapist and be prepared to follow them
- Be aware of previous exercise levels and work towards these
- Don't ask for static exercises that put strain on the body such as planks and side planks
- Be cautious with abs exercises if there has been abdominal surgery
- Watch the client very carefully and stop anything that is causing pain or any other adverse effect
- Watch the client carefully for any signs of poor balance, and support appropriately
- Stop if the client has any nausea or dizziness
- Progress slowly and carefully

- Encourage your client to honestly feed back how they are feeling and any changes in their body
- Be prepared to stop the exercise session and listen to their concerns

Section 4 – Self-assessment questions

1. What would you do if you were worried about a client?
2. Why do you need to know if your client is taking steroids?
3. Why do you need to know if your client is taking analgesics (painkillers)?
4. When would you write a letter to your client's GP/surgeon/physiotherapist/oncologist?
5. What are three reasons to stop exercising?
6. What three things should you take into account when planning an exercise programme?
7. What are your three top tips for planning an exercise programme for clients who have cancer?

*** Check your insurance ***

Become familiar with the assessment form.

Section 5 – Being professional

Writing letters

It is very important that any letter you write is professional and well presented. You will greatly increase your chances of getting a response if you write well and politely. That is why there are specimen templates at the end of these sections. Always show the client the letter before you send it.

Be succinct and make it very clear what it is that you want the response to be about. The Health Care Professional will not write the exercise programme – mainly you want to know whether there are any contraindications to what you are planning.

Always type both the letter and the envelope.

Keep a record and a copy of the letter.

Confidentiality

All your records must be stored in a locked cupboard. When you take them out to work with your client, keep them safe and don't leave them lying around. If you put client notes in your car, always put them in the boot of the car.

NEVER share any details of your client's cancer or treatment with anyone who doesn't need to know. This includes friends, family, other members of the gym, other gym staff (unless you need their help in an emergency). The information that is given to you is private and confidential.

Do not send emails about your client – this is not safe and is not acceptable. If you are worried about your client, get their written permission to share information with their HCP.

Explain at assessment that, if your client becomes unwell, you will call for help and will have to share their medical information.

Supporting your client

You may find that your client wants to discuss their worries and concerns with you. You do not have the answers; it is not your role to give advice. Your role is to listen attentively without passing judgement or offering unrealistic hope. The client will have access to HCPs who are skilled in these areas, but might just want to 'sound off' with you. It is important to maintain a professional relationship. Try hard not to get over involved; your client needs you to be objective and friendly, they don't need your tears.

If the client becomes less well, adjust the exercise programme accordingly. Many people like to continue with some exercise and not feel like they have given up.

Looking after yourself

Working with clients with cancer can be hard. It might bring up your own concerns about illness, death and dying. It is very important that you find appropriate help to discuss the issues as they arise. This might be with a counsellor, coach or trusted friend. Remember to maintain confidentiality.



Section 6 – Case Studies

Client 1 – June

- June is 52 years old
- Previously fit and healthy; played tennis and did yoga
- Has breast cancer with lymph node involvement
- Has had mastectomy and reconstruction (from tummy area) six months ago
- Has finished chemo

Write her a programme.

What are your main concerns?

What help will you need?

Who will you talk to?

What might June's concerns be?

Client 2 – Peter

- Peter is 70 years old
- Previously had an active job
- Has cancer of the prostate – no known mets
- Has had a radical prostatectomy three months ago
- His back hurts and is getting worse
- Is on hormone treatment

What are your concerns?

Can you write a programme?

What do you need to consider?

What are you going to say to Peter?

Client 3 – Sally

- Sally is 40 years old
- Previously did not exercise
- Has cancer of the bowel
- Has had surgery and had a colostomy
- Has had radiotherapy and chemotherapy
- Feels tired and has lost a great deal of weight

You start with gentle exercise. The following week, Sally tells you she has been bleeding from her rectum. What do you do and why?