

# PEAK

## Physiotherapy **E**xercise and physical **A**ctivity for **K**nee osteoarthritis

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### **OSTEOARTHRITIS INFORMATION**

This booklet provides information about knee osteoarthritis and effective non-surgical management options.

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# Understanding knee osteoarthritis

## What is knee osteoarthritis?

Osteoarthritis is a joint problem that can cause chronic (persistent) joint pain and difficulties with daily activities. Osteoarthritis affects the whole joint including cartilage, bone, ligaments and muscles. Osteoarthritis is an active process of your body responding to small injuries to your joints. It is this active process that initially causes the joint pain.

There are many things you can do to help with your osteoarthritis pain and the outlook for most people is very positive. With the right approach there is every chance you will be able to keep doing all the things that are important to you.

## Diagnosing knee osteoarthritis

Your doctor will usually diagnose you with knee osteoarthritis if you:

- Are aged 45 or over
- Have knee pain when you are active that has lasted more than 3 months
- Have either no morning knee stiffness or morning stiffness that lasts no longer than 30 minutes
- Have no history suggestive of another health problem (your doctor will check for other health problems).

X-rays are not required to diagnose knee osteoarthritis or to decide on the best treatments for you. This is because x-ray results are poorly related to how much pain, stiffness or disability you may experience, and x-rays do not tell us which treatments will be most beneficial for you.

## What causes knee osteoarthritis?

Osteoarthritis is more common in older people, but can affect younger people as well.

Some things that increase the risk of developing knee osteoarthritis include obesity, sporting injuries and prolonged kneeling for work. However, for many people the cause is not known. It does not matter if the cause of osteoarthritis is unknown, as the cause does not influence the management plan.

### Prefer to watch a video about osteoarthritis?

Consider this short video (developed at the University of Melbourne) that explains osteoarthritis & its management in lay language:

<https://youtu.be/o8ZJN56aSic>

## What causes knee osteoarthritis pain?

Pain in knee osteoarthritis is complex. Changes to the knee tissues, your mood, anxiety and stress levels, poor sleep or fatigue or sometimes just focussing too much on the pain can all affect your experience of pain.

Pain can make you avoid activity and can affect your mood and sleep. But inactivity leads to muscle weakness, weight gain, feelings of joint instability and can make your mood and sleep problems worse. These factors can affect each other to create a cycle that makes your pain feel even worse.

Staying active, losing weight (if you need to) and strengthening your muscles can help with the pain and can stop the cycle of decline, as well as improve your overall health.

## What will happen over time?

For most people, knee osteoarthritis will be stable with occasional flare-ups from time to time. While a flare will make you feel worse for a little while, the pain will usually settle down again in time.

Most people's knee osteoarthritis will not become severe enough to need a joint replacement. In fact, your pain may improve over time.

Taking control of your knee osteoarthritis and learning ways to manage your pain are really important. Finding a team of trusted health professionals, and others who can provide support and understanding, will help you manage as your needs change over time.

### Common osteoarthritis beliefs that are all FALSE

- Pain comes from wearing down of the cartilage
- Osteoarthritis always gets worse over time
- Exercise will further damage the knee joint
- There is nothing to be done for knee pain
- Joint replacement surgery is always needed

## Osteoarthritis treatment options

	EXERCISE AND PHYSICAL ACTIVITY	WEIGHT LOSS
<b>What would I have to do?</b>	<p>Exercise is universally recommended for everyone with knee osteoarthritis. It's important to find a type that works best for you and there are many options:</p> <ul style="list-style-type: none"> <li>• Strength training</li> <li>• Aerobic, such as walking or cycling</li> <li>• Water exercise</li> <li>• Tai Chi</li> </ul> <p>Exercise should be performed regularly 3-5x each week at a moderate level engaging in activities that strengthen muscles around the joints and increase fitness.</p>	<p>Weight loss is recommended if you are overweight. Achieving and maintaining weight loss requires making changes to your lifestyle. This involves changing your eating and drinking habits and incorporating physical activity and exercise.</p>
<b>What are the benefits of this treatment?</b>	<p>Exercise can help reduce knee pain, and improve function, general well-being and mood. Benefits of exercise on pain are greater or similar to simple analgesic drugs and oral NSAIDs but without the side effects.</p> <p>Exercising may also help you to avoid or delay the need for medicines or surgery.</p> <p>Exercise may help control body weight and has a range of other health benefits.</p>	<p>Even a small amount of weight loss can be beneficial but the more weight you lose, the greater the benefits. Research has shown that losing between 5-10% of body weight can reduce knee pain and improve function. Greater improvements are seen if you combine dietary modification with exercise.</p> <p>Weight loss also has a range of other health benefits.</p>
<b>Are there any risks to this treatment?</b>	<p>Exercise is safe for people with osteoarthritis. You may experience some temporary increase in knee pain, stiffness, and swelling, but this does not mean that your osteoarthritis is getting worse. Your exercise program can be altered to find the one that suits you best.</p>	<p>It can be difficult to lose weight and to maintain the weight loss. This may cause negative feelings and you may feel upset or frustrated about a lack of results.</p>
<b>How long will it take me to feel better after the treatment?</b>	<p>Feelings of well-being may occur immediately after exercise. While benefits are generally apparent after a few weeks, it may take up to 12 weeks for maximal improvements in pain and function.</p>	<p>This varies from person to person depending on how long it takes to lose weight. Generally maximum benefits are seen around 6 months.</p>

MEDICATIONS	INJECTIONS	PAIN-COPING ACTIVITIES
<p>The medications often recommended for osteoarthritis include:</p> <ul style="list-style-type: none"> <li>• <b>Topical analgesics</b> – these are rubbed into the skin over the knee to relieve pain (e.g. capsaicin, non steroidal anti-inflammatory medications (NSAIDs))</li> <li>• <b>Oral analgesics</b> – these are taken by mouth to relieve pain (e.g. paracetamol, oral NSAIDs)</li> </ul> <p>It is important to note that oral opioids are not recommended as they have small (if any) benefit and there is a substantial risk of serious harm.</p>	<p>This involves the injection of medication by a doctor directly into the knee joint. Two commonly used injections for osteoarthritis are corticosteroids and hyaluronic acid. These are often reserved for individuals who are not getting relief with painkillers or non-medication treatments.</p>	<p>Our thoughts can heavily influence pain intensity as well as our response to pain. People with knee osteoarthritis can often have low mood or anxiety, further increasing pain. Pain-coping activities can be used to help reduce negative thoughts and feelings which may then reduce the pain you experience. They can also teach you useful skills to help you cope with pain.</p> <p>Techniques available include:</p> <ul style="list-style-type: none"> <li>• Counselling</li> <li>• Cognitive Behavioural Therapy</li> <li>• Relaxation</li> <li>• Mindfulness</li> </ul>
<p>Topical and oral analgesics can be beneficial short-term pain relievers for osteoarthritis. Combining them with non-medication strategies such as exercise may reduce the amount of medication needed.</p>	<p>Corticosteroids can provide quick, short term pain relief. Previous research has generally shown little effect for hyaluronic acid injections compared with placebo injections (saline solution) for knee osteoarthritis.</p>	<p>Pain-coping activities can help improve mood, by lessening feelings of depression or anxiety, as well as reduce pain and improve function. They can also help with sleep quality and weight-loss efforts.</p>
<p>Topical analgesics may have side effects such as local irritation. Both oral NSAIDs and paracetamol can have negative side effects on your heart, kidneys, and digestive system especially with prolonged use. The risk of having a problem depends on individual factors such as other health conditions.</p>	<p>There is a small risk associated with injections such as infection in the joint or increased pain in the knee immediately after. Other side effects include alterations in blood sugar from corticosteroids.</p>	<p>It can be emotionally overwhelming or confronting when developing skills to become more aware of negative thoughts and how to deal with them.</p>
<p>Pain relief may start to occur after a couple of days when you begin taking medication but the relief is often short-term. Medications will affect people differently so it is important to discuss this with your doctor or pharmacist.</p>	<p>Rapid pain relief may occur for some individuals after 24-48 hours. These effects are generally short lasting and are often gone after 4 to 12 weeks.</p>	<p>Pain-coping activities may take some time and practice in order for benefits to become apparent. Relaxation strategies may help immediately after a session to reduce increased muscle tension, negative feelings and stress.</p>

## Physical activity

Low levels of general physical activity are common in people with knee osteoarthritis. Scientific evidence shows that people with knee osteoarthritis are less active than people of the same age who do not have osteoarthritis. This is because many people with osteoarthritis worry that doing physical activity can increase their pain. This leads many people to change the way they do things- for example, taking the elevator instead of the stairs, reducing the hours that they work, avoiding trying new activities and taking more rest during the day. For some people, the fear of pain increasing is enough to stop them from being active. A habit of underactivity can occur.

### What types of general physical activity can I do?

The good news is there are lots of options! The table below lists some ideas you could consider.

Take more steps in your day	Sit less in the day	Offer to walk a dog
Walk at a faster rate	Play with the kids/grandkids	Walk with a friend
Perform cleaning or other tasks more vigorously	Take the stairs	Walk up hills
Alter your transport to more active options	Gardening	Stand up or exercise when watching TV
Start a new activity (swim, cycle, walk)	Take a class (water aerobics, yoga, low impact aerobics)	Walk while on the phone
Join a club (dance, bowls, hiking, tai chi)	Park the car further away	Wash the car

### How intense does the activity need to be?

For good health, people should spend some time on most days being physically active at moderate intensity. However, if this is too difficult for you at first, health benefits can still be gained by doing

more light physical activity. Therefore, you should focus on increasing the amount of general physical activity you do, regardless of the intensity.

So how do you gauge the intensity of an activity? One way is to think about how hard you are breathing. If you are breathing harder than normal but still able to speak in sentences, then you are working at a moderate intensity. If you are out of breath and can speak only one word at a time, then your intensity is probably vigorous! If you don't even have to breathe deeper or faster, then you are probably working at a light level.

Another way of gauging if your activity is moderate intensity is to use a modified version of the Borg scale to estimate intensity. The Borg scale is based on how you feel during physical activity such as the amount of breathlessness you feel, how much you sweat, and the muscle fatigue you experience. Taking all these feelings

into consideration, you can rate your level of exertion from 0 to 10, where 0 is rest or no effort at all, and 10 is maximal exertion. A level of 3-4 out of 10 indicates moderate intensity activity.

RATING	DESCRIPTOR
0	Rest
1	Very, Very Easy
2	Easy
3	Moderate
4	Somewhat Hard
5	Hard
6	-
7	Very Hard
8	-
9	-
10	Maximal

### Tips for increasing your general physical activity levels:

- Small changes to your daily routine can have a positive effect on your health and your knee.
- Avoid long periods of inactivity in your day.
- More frequent short bouts of activity work best for people with knee osteoarthritis.
- Perform physical activities over realistic timeframes.
- Gradually increase your amount of physical activity and/or your intensity
- Vary your activity by changing the environment.
- Pace your activities- even on bad days.
- Time yourself to help you pace your activity and make sure you don't over- or under-do it
- Use an activity monitor (such as a Fitbit) to record your daily steps.
- Perform moderate intensity activity in bouts of at least 10 minutes. That means you are puffing for 10 minutes continuously.

## Barriers to exercise and physical activity

Barriers are things that get in the way of us being physically active and/or doing the exercises that have been prescribed by a health professional.

### BARRIERS CAN INCLUDE:

- Bad weather
- Feelings of laziness
- Other people's opinions (including your doctor) who don't like to see you hurting
- Getting a cold or flu
- Holidays!
- Pain
- Fear of falling
- Feeling like you are not physically capable of exercising
- Negative thoughts ("exercise won't help me anyway")
- And so on...

Some barriers you can anticipate and plan for with some prepared strategies. Others you will discover as you try to stick to your exercise and physical activity plan and then fail to achieve it. You will get better at finding ways to overcome barriers with time and determination.

For each problem, you might think of several possible solutions. Try one and if it does not work, try something else. Some solutions may take some time to work out. Be creative and don't be afraid to try out ideas even if they seem a little crazy.

### Time as a barrier

Lack of time is the most common barrier. To help overcome time issues preventing you from achieving your physical activity/exercise plans, it may help to have a good look at your daily routines. You may be able to come up with creative solutions. Look for small windows of time that you are free to take a short walk, for example. Plan when you will do your

exercise session by scheduling it ahead of time in your calendar.

The other important way to overcome time as a barrier is to ensure that physical activity is right up high in your list of priorities. Think about how a stronger, less painful knee and better overall health will benefit all the other aspects of your life!

### Pain as a barrier

It is common for people to feel pain in their knee joint, or in the muscles, during exercise or for a short period of time following exercise. This is normal and does not indicate that their osteoarthritis is getting worse or that exercise is not good for their osteoarthritis. However, pain should not be severe or lasting. If you get unacceptable pain (moderate to severe intensity) during an exercise, or increased pain and swelling after exercising that lasts through to the next day, something about your exercise program needs to be changed. You should back off a little and perhaps discuss modifications to what you are doing at your next physiotherapy visit. You could leave out an exercise if it seems that one in particular is causing the problem, or you could try cutting back to doing half the number of sets/repetitions of the exercise.

### Low energy or fatigue as a barrier

People tend to find that exercising actually gives them more energy once they've managed to get themselves started. While you might feel tired initially, as you continue you will start to feel more energised. Also, people often sleep better and therefore feel less tired during the day. Regular exercise and physical activity can help break the negative cycle of feeling tired and doing less activity, which leads to feeling even more tired and lethargic.

### Do not enjoy exercising

There are very few people who are lucky enough to actually enjoy exercising just for the sake of exercising. There are many forms of exercise and physical activity; it often comes down to choosing activities that you dislike the least. Boredom can be a real problem in maintaining enjoyment and motivation. Vary your exercise routine. Keep a look out for other ways you can be physically active that you might enjoy a little more, at least for a while.

There are also ways that you can help make physical activity a more pleasurable experience. For instance, meet a friend for a walk or join a group, walk or ride in a beautiful place, listen to music that lifts your spirits while you are doing your exercises.

### **Caring for others**

This not only takes up time but it takes up your emotional energy too. Sometimes you can feel guilty for putting yourself first even for a little while. But by keeping physically active yourself, you are preserving your own physical and mental health so you will be better able to help your loved ones over the longer term.

### **Sickness**

Everyone gets sick from time to time. It's OK to stop your exercise routine while you are sick and recovering, but it is surprisingly hard to get back going again after a break. When you are on the mend, start thinking ahead and make a plan or set a date for when you are going to start adding your physical activities back into your daily routine again. You might need to build up gradually all over again, but it is worth it. The activity will probably help speed up your recovery and will certainly help maintain your health over the long term.

### **Holidays**

Holidays disrupt routines and can cause set-backs if you don't plan ahead. Sometimes holidays provide new opportunities to vary your exercise routine or try new types of physical activity. Try doing some research before you go and make some plans on how you can build some activity into your holiday. You might plan to ask the hotel reception staff on your first day there to recommend a nice local walk. You might plan to hire some bikes for a day, or book a walking tour. A break from your routine is not such a bad thing as most people will get bored with doing the same thing over and over. When you come home, make sure you set a date for resuming your exercise and physical activity back into your daily routine.

## **Strategies to overcome barriers**

### **Reminders**

If you have a tendency just to forget to exercise, you can try some little tricks like leaving your shoes or exercise clothing out where you can't miss them, leaving yourself notes or setting alarms or reminders, or scheduling activities into a calendar or diary. Most smart phones have reminder and calendar applications naturally built into them that can be used along with alarms to help remind and reinforce exercise routines.



### **Rewards**

Some people find a reward system really helps them to keep motivated to do something they don't feel like doing. Examples of rewards include:

- Giving yourself points each time you achieve an exercise goal and planning to do something nice for yourself each time you reach a target number of points.
- Rewarding yourself with some relaxation time with a book or a nap.
- Set yourself some targets and plan a treat such as a new pair of (walking) shoes when you reach your target.

Be creative with your rewards (but don't reward yourself with a week off!)

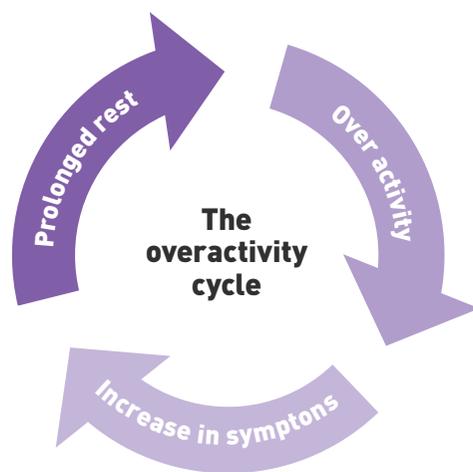
### **Social support**

Enlisting someone to help you do your exercises or become more active can help you stick to your plan. Even better, if you and your buddy do it together, you can help motivate each other.

## Activity pacing

### Overactivity and its consequences

It is often tempting to do activities or jobs on days when your knee symptoms are mild, or to do a lot more in a shorter period of time to make up for days when you felt tired or your knee pain was worse. Overactivity can happen when you increase the load placed on your knee by a large amount and in a short space of time, for example, by doubling your usual walking distance in a single day to get all of your household chores done quickly. Although the increase in pain felt after this type of overactivity does not mean the joint has been damaged, it can be uncomfortable and requires rest to settle it.



There are many negative consequences of being caught in the over activity cycle. In the short term, these include:

- Increased severity of pain
- Anticipating severe pain with physical activity
- Increased tension, worry and anxiety
- Avoidance or cancelling activities, including pleasurable activities that make you feel good

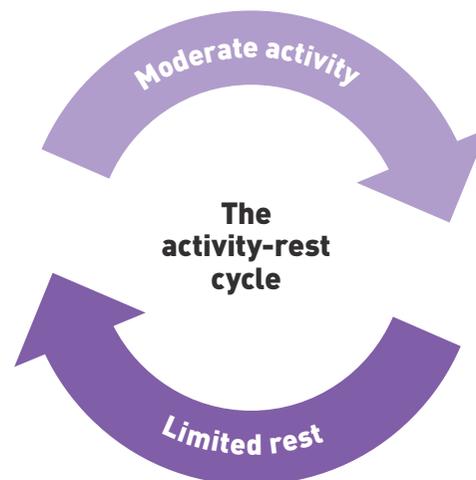
Over time, this can lead to a worsening of the problem as you engage in less physical activity and become deconditioned, losing muscle strength, flexibility and general fitness.

### How should I manage my physical activity?

“Pace your activity” by breaking everyday activities and exercise into smaller portions. Rather than one long session of physical activity, do shorter periods of physical activity or exercise, with a rest in between. Pacing your activity means finding the

middle road - and not overdoing or underdoing physical activity. Activity pacing is important in pain management because it helps you stay active doing the things you want to do and helps you to avoid pain flares.

To pace your physical activity, you should focus more on the amount of time you spend doing an activity rather than on the amount of pain experienced. Think about the distance you have walked, or the



time you have spent standing up, to tell you when to stop the activity and take a rest. You can gradually build up your physical activity over time using this approach by increasing the distance walked, or time spent being active, before taking a break.

Some knee pain is to be expected during physical activity and exercise, and when you are trying to increase your physical activity levels. Comfortable levels of discomfort and pain are OK. If you are feeling good about your physical activity, it can be tempting to quickly increase your amount of activity over a short space of time. Avoid this as you may fall into the over activity cycle!

Some benefits that you might experience from pacing activity:

- Continue doing pleasurable activities rather than cutting back.
- Stay involved in important daily activities.
- Control the amount of symptoms you have during activities rather than having the symptoms control you.
- Avoid extreme flare-ups of symptoms.
- Become more productive in the long run.
- Gradually increase your general levels of physical activity and therefore gain improvements in strength and fitness.
- Less pain, tension, and fatigue.

## Weight loss for osteoarthritis

Being overweight is associated with many health issues like cardiovascular problems and diabetes, but it can also contribute to the pain you feel in your knee and difficulty with everyday activities. Losing weight is therefore recommended for people with osteoarthritis.

### How does losing weight help knee osteoarthritis?

Being overweight places extra stress on the joints of your legs, in particular the knees. Each kilogram of body weight results in an extra 4 kilograms of load going through the knees during usual daily activities. Even a few kilograms of weight loss can substantially reduce the load on your joints. Excess weight can also lead to higher levels of inflammation in the body which contributes to your knee osteoarthritis. Weight loss noticeably improves the amount of pain and stiffness experienced by those with knee osteoarthritis and helps them function better. Maintaining a healthier body weight might also help delay or avoid the need for medicines or surgery.

### How much weight loss gets the best results?

Most people experience improvements (e.g. less pain) after losing 5-10% of body weight. That means if you weigh 90kgs, you should notice you have less pain after losing between 5-9kgs. The more weight you lose, the greater the improvements in pain and function. Reduced pain and improved function is also greater if you combine dietary modification with exercise.

### What do I need to do?

Losing weight involves making changes to your eating and drinking habits, as well as regular exercise.

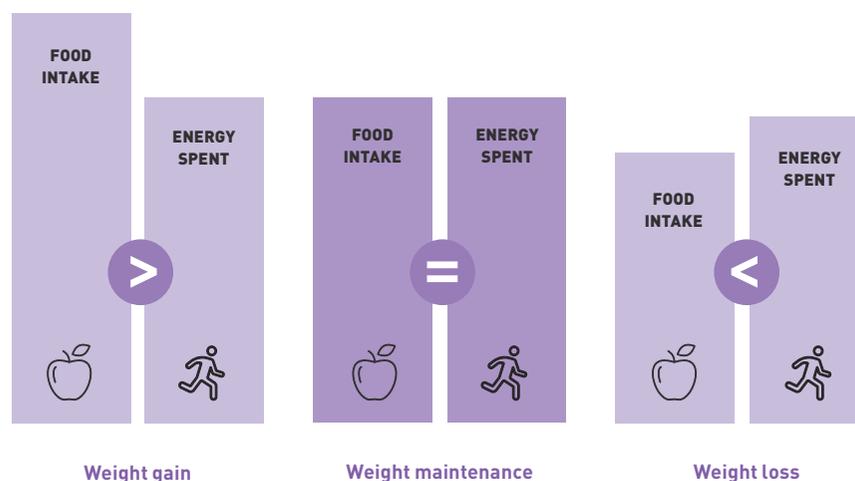
While this sounds simple, we all know that losing weight and then keeping the weight off can be extremely difficult.

Some tips to help you include:

- Set yourself realistic goals and be patient. Don't beat yourself up or give up if you 'fall off the wagon' – get back on track and re-focus on your goal.
- Get your friends and family on board to help keep you motivated. Even better is to find someone who wants to lose weight with you so that you can help each other.
- Keep a food record of what you eat.
- Learn about healthy food choices.
- Eat slowly and savour every mouthful.
- Drink water regularly.
- Get enough sleep. Not getting enough sleep at night has been shown to contribute to weight gain and may even affect the amount of pain you experience in the knee.
- Plan exercise and physical activity into your schedule.

### Key points

- If you are overweight, losing weight will help reduce your knee pain and disability.
- Aim to lose around 5-10% of your body weight.
- Combine weight loss strategies with some exercise and physical activity.
- Think ahead to what eating habits you will change to help you keep the weight off long term.



## Overcoming barriers to weight loss

Losing weight can be challenging and difficult. Barriers are things that get in the way of your plans to lose weight. Some examples include:

- Lack of time
- Eating when you are not hungry
- Lack of knowledge about healthy eating
- Holidays/Special events
- Lifestyle choices

Some barriers you can anticipate and plan for with some prepared strategies. Others you will discover as you try something new and then fail to achieve it. You will get better at finding ways to overcome barriers to weight loss with time and determination.

For each problem, you might think of several possible solutions. Try one and if it does not work, try something else. Some solutions may take some time to work out. Be creative and don't be afraid to try out ideas even if they seem a little crazy.

### Lack of time

There never feels like there are enough hours in the day. Time is a barrier that we all need to deal with so you're not alone. Consider a busy day at work so you quickly grab some food on the go or trying to find the time in the week to plan meals and get to the grocery store. Being busy can also get in the way of finding those extra 10-20 minutes in the day for exercise/physical activity.

It may be helpful to spend the weekend planning your healthy meals for the week and what you will need to buy from the grocery store. Take your own lunches to work with you to reduce the urge to grab a meal from a fast food chain. If you find it difficult in the morning to get meals made for the day, try preparing them the night before. We all run on different schedules so take some time now to think about your own routine and what has previously made an impact on your weight loss plans.

### Eating when you are not hungry

Many times we eat even though we are not hungry. This can be due to a number of reasons. We may eat because we are bored or lonely. We may eat to distract us from pain. We may use food to reward ourselves. Another major factor that can also influence weight loss plans and even increase knee osteoarthritis pain is stress. We all respond differently to stress and it can get in the way of us being physically active. Stress can be a trigger for many people to eat and drive us to choose foods that may not necessarily be good for us (for example, that block of chocolate!). Other people will end up eating less or may miss meals. If you are a person that uses food to help soothe difficult feelings routinely, you may need to explore options other than food such as listening to music, seeking a friend to socialize with, or even taking a walk around the block.

Reducing stress can give us a sense of control over our lives to find more time to do things that are good for us such as getting physically active. Planning your routine and becoming more conscious of your daily routine may help reduce your stress. Other strategies including relaxation training, mindfulness therapy or modifying your thought processes to stressful events can be helpful. Your local community may offer such courses or you may need referral to a health professional from your GP to pursue these options.

### Lifestyle – Eating habits

Many people have coupled certain events with their eating and drinking and developed some unhealthy habits. When this occurs, these events alone may begin to make you feel hungry. For example, if you routinely eat while watching the news or reading the paper, then every time you do these activities it is a trigger to eat.

To help break these eating habits, consider some of these strategies to separate these events so that you can identify and respond to actual hunger. Try to not do anything else while eating. If it feels uncomfortable at first this may be a good sign that you need to continue to practice this as you have developed the habit of eating with other activities. When you are distracted, you also pay less attention to how much you eat. Plan an eating schedule that fits in with your lifestyle and attempt to eat at one



place. For example, eating breakfast at 7:15am at the table (NO reading or news), 12:45pm at work in the kitchen or away from the desk for 15 minutes.

Try to keep a food diary as well to help you monitor what you are eating. Track everything and as soon as you eat it! Your food diary will not be as accurate if you forget to capture snacks you eat throughout the day. Sometimes we don't realise that all those extra foods we eat here and there all add up.

### Knowledge

Knowledge is power, but it can be difficult to make healthy choices if you've never been taught about healthy eating – what to eat and how much to eat. Grab something from your pantry and have a look at the food label. There's ingredients, health ratings, daily intake %'s and more. It can be a little overwhelming and make us choose foods that we are familiar/comfortable with at the shop based on our experiences. One strategy to incorporate healthier choices is to become a more informed consumer by learning how to make good food choices.

### Holidays/Special events

Holidays or special events are to be enjoyed. But they are also a prime time for us to give into our food desires and can be a trigger for most of us to over-indulge. The social aspect with lots of people around and all the variety of food choices can be a driver for people to over eat.

The key is to plan how you will deal with the event. For example, you might bring your own meal that you can enjoy or you may eat less at other meals to make up for it.



## Understanding and managing your pain

Living with pain can be one of the hardest parts of having osteoarthritis. Pain is actually a lot more complex than most of us realize. Sensations from your knee are processed in your brain and those pain messages are influenced by all sorts of other messages in the brain before they become the awareness of pain that you experience.

If you live with chronic or persistent pain, you're not alone. It's a common and complicated problem that affects 1 in 5 Australians.

There are two important factors that influence your pain experience:

1. The first is related to the amount and type of sensations coming into your brain. The pathway to your brain is like a motorway that can only take a limited amount of traffic. The motorway gives preference to certain sensations over others. 'Normal' sensations for movement, touch and warmth are given preference over pain sensations. The more 'normal' sensations that come from your knee, the less pain sensations that get through to your brain and therefore your awareness. That is why pain can feel worse when there is not much else going on, and better a few minutes after you start walking. That is also why we sometimes rub our knee to make it feel better, and the main reason why a heat pad provides relief.
2. The second factor relates to how your brain amplifies pain sensations. It's like there is a volume control knob in your brain and things like your mood, stress levels or other thoughts can turn the volume of incoming pain messages up or down. For example, it is well known that stress, anxiety, depression, fatigue and negative thoughts can all turn the pain volume up. Thus, relaxation techniques and dealing with depression and negative thoughts can really make a difference to the level of pain you feel. Thinking about other things, or distraction techniques, can also help turn the pain volume down. These techniques require practice for them to work well and can be hard to learn on your own, but you might feel some benefit from trying out some simple distraction, such as thinking of pleasant experiences when the pain gets bad, or reducing tension with relaxation.

It used to be thought that pain was just a simple message from your body straight to the brain. However, lots of research has shown that pain is much more complex than that, and that the brain can change how we interpret messages of pain. So, if we are feeling stressed, for example, we know that this can often affect our blood pressure or our gut, and we now know that it can also impact our feelings of pain. So, pain, like other things happening in our body, can often feel worse when we are stressed or anxious. Many people notice that their thoughts and feelings can have a major effect on their pain.

The good news is that there are many things you can do to help manage your pain. It's a good idea to try a few different things so that you have a choice of different strategies and tools that you can call on when needed. This will give you more control over your pain.

The following pages have some ideas to help you to take control of your pain by managing thoughts, feelings and actions that affect your pain.

The logo for painTRAINER, featuring the word "pain" in a light green font and "TRAINER" in a bold, dark green font, with a checkmark symbol to the right.

painTRAINER is an interactive, online FREE program that teaches you effective strategies to manage your pain. It is made up of 8 sessions, each lasting about 30-45 minutes. You will learn a variety of pain coping skills and how to use them in your everyday life.

The painTRAINER program was developed by the researchers at the Centre for Health, Exercise and Sports Medicine at the University of Melbourne.

[www.painTRAINER.org](http://www.painTRAINER.org)

## Progressive muscle relaxation

Relaxation is one of the most important skills for controlling and decreasing pain and other symptoms of osteoarthritis, as well as stress, fatigue and difficulty sleeping.

Relaxation is a skill that can be learned just as any other skill such as driving a car or typing.

Progressive muscle relaxation teaches you how to pay attention to feelings of tension and relaxation in your body. This is done by tensing various muscle groups. By tensing muscles, it makes it easier for you to release them and become more relaxed. You will learn to keep tension in your body at a low level. Less tension usually means less pain.



### How to start

First you need to find a comfortable place to sit or lie down. Make the environment as relaxing as possible, turn down lights, turn off your phone, put on some gentle music to block out any distracting noises. If you are comfortable to do so, close your eyes.

Relax your body. Breathe slowly and evenly. Take your time to focus on smooth, even breaths.

Starting at your feet, point the toes of your right foot, slowly flexing and tightening the muscles. Notice the tension, hold this for a few seconds, then relax.

Now do the same with your left foot, slowly flexing and tightening the muscles, and noticing the tension. Hold for a few seconds, then relax.

Move onto your calves. Slowly curl the toes of your right foot, pointing your foot so that you are tightening the calf muscle. Notice the tension. Hold for a few seconds, then relax. Move onto your left calf.

Continue to work your way through your muscle groups, tensing the muscles as you go, noticing the tension and holding for a few seconds, then relax.

**Right foot** – point your toes, relax

**Left foot** – point your toes, relax

**Right calf** – curl your toes pointing your foot towards your calf, relax

**Left calf** – curl your toes pointing your foot towards your calf, relax

**Right thigh** – tighten the muscles, relax

**Left thigh** – tighten the muscles, relax

**Buttocks** – squeeze the muscles, relax

**Stomach** – suck it in, relax

**Chest** – breathe in deeply filling your lungs and chest, then breathe out

**Back** – pull your shoulder blades together, relax

**Chest** – Breathe in deeply filling your lungs, then breathe out

**Back** – pull your shoulder blades together, relax

**Shoulders** – shrug your shoulders up to your ears, relax

**Neck** – pull your head back slowly as though you are looking at the ceiling, relax

**Forehead** – raise your eyebrows as far as possible, relax

**Eyes** – squeeze your eyes shut, relax

**Jaw** – open your mouth wide, relax

### TIPS

**Don't tense your muscles so hard that they cramp or you feel pain.**

**Don't tense and relax areas where you're having intense pain. You might want to try a different form of relaxation, or skip that muscle group.**

**This relaxation technique can be done anywhere, and can be done sitting or lying down.**

## Mini relaxations

Using the progressive muscle relaxation technique is a great way to gain deep relaxation.

Mini relaxations are similar to progressive muscle relaxation, but can be done much more quickly and easily. It's a good idea to practise both, so you can add them to your tool kit of strategies to help manage your pain.

A mini relaxation can be done in 30 seconds or less, and they can be done anywhere and at any time. This skill can be very helpful when you are feeling increased tension or pain by reversing the tension you feel and replacing it with a feeling of quiet relaxation.

### Places you could try a mini relaxation:

- Sitting on public transport
- Sitting in a car
- At your desk at work
- While cooking
- While talking on the phone
- While eating or drinking
- Before going to sleep
- While sitting at a computer
- While in line at the supermarket.

You should try beginning with 5 mini-practices per day and then try building to 8.

*To do a mini-relaxation, begin by stopping to focus on yourself.*

*Let go of as much tension as possible throughout your body.*

*Focus on relaxing the muscles in your stomach or diaphragm and breathe deeply. As you exhale slowly, say the word RELAX to yourself.*

*Place your arms and hands in a comfortable position. With your body as relaxed as it can be, take a slow, smooth, deep breath (3-5 seconds), pause or if you prefer, hold it (3-5 seconds) and exhale (3-5 seconds) This tells your body to quiet itself.*

*Now allow your body to breathe on its own and focus on relaxing your muscles.*

*Think of a relaxation "wave" flowing down across your forehead, your jaws, your neck and shoulders, your hands and arms, your midsection, legs, and feet. Feel the relaxation spreading down through your jaw.*

*Allow sensations of heaviness to flow downward throughout your shoulders, through your arms and hands, down into your stomach, and your legs and feet.*

*After 30 seconds, go about what you were doing—regardless of how well you have succeeded in relaxing.*



## Pleasant imagery

Pleasant imagery is a technique that uses your imagination to create a pleasant scene, a bit like what you do when you daydream.

This relaxation technique allows you to focus on a favourite place – real or imaginary – that's safe, calm and pain-free.

Studies have shown that imagery is a very effective technique for reducing stress and pain.

Imagery can help you in two ways. It distracts you away from unpleasant thoughts or experiences. When you are concentrating on something pleasant, you are not able to give as much thought to your discomfort. It can help you to relax. You can use imagery along with muscle relaxation exercises to enhance the benefits of relaxation, or you can use it alone.

Common pleasant imagery scripts that people use include a walk on the beach, or a walk in the garden. To practise this, you can create your own story or you could listen to some music. If you are doing it yourself, try and come up with as much detail as possible – think about the things that you see, feel, taste, smell and hear.

Find a comfortable position. This may be in a chair, on your bed or outside somewhere calm and quiet.

Find your own calm, safe place to go to in your imagination, and build up a picture of that in your mind....

### Example script

*Close your eyes and imagine you are on a beach. It's a small, sheltered cove. You have the place to yourself. It's a beautiful clear, blue sky day, perfect for walking. There's not a cloud in the sky.*

*The waves are coming in slowly and the water sparkles in the sunshine. The air is fresh and salty. Inhale the clean air. While you breathe in, imagine the air is filling you with energy. As you breathe out, feel your pain and anxiety go out with your breath and fly away over the water.*

*You hear the cries of gulls as they fly overhead. Watch as they swoop and dive and perform the most amazing acrobatics. As you watch them, feel their joy and excitement as they play in the air currents.*

*Under your feet the soft sand is lovely and warm. Curl your toes and feel the crunch of grains of sand. The warmth from the sand travels up your feet, making your whole body feel warm, relaxed and calm.*

*You move on and walk slowly along the beach. You notice a small crab making its way along the sand, leaving tiny prints as it goes. Shells glitter in the sand. The trees along the edge of the beach are swaying in the breeze. It all feels so calm and unhurried.....*



## Mindfulness

Mindfulness focuses your mind on the present moment. It trains your mind to be alert and pay attention to the thoughts and sensations you feel and to accept them without judgement. Being mindful is being aware of the present moment.

Regularly practising mindfulness has been shown to improve mood, relieve stress, improve sleep, improve mental health, and reduce pain.

A good way to start practising mindfulness is to be conscious of your breathing. For most of us, breathing is something we take for granted. We never think about it. By focusing on our breathing, we can bring our mind to the present moment, and this is a technique that can assist with pain management. You can do it anywhere, any time. It's often useful when you are trying to sleep or waiting for your pain medication to kick in.

### Mindful Breathing

Find a comfortable position. Relax your body, especially your shoulders, chest and stomach.

If you want, close your eyes. This can help you to become more relaxed and block out distractions.

Clear your mind. Put aside your thoughts, worries and anxieties.

Focus on your breath in, and then your breath out. Count your breaths if that helps. If thoughts intrude, don't worry about that, just watch the thoughts glide by, without judgement, like you might watch clouds float across the sky.

Come back to your breath, in and out.

You will feel your muscles start to relax, and your mind will begin to calm.

This is often a technique that people use as a starting point for practising mindfulness meditation.

To practise mindfulness meditation, you can join a class, listen to a CD, learn a script from a book or play a DVD or online video.

A simple technique to give you a further taste of mindfulness meditation is to do a body scan. It helps you become aware of your body in the present moment.

### Simple Body Scan

*Find a comfortable position. Close your eyes and relax your body.*

*Breathe in and out slowly and gently. Take your time and focus on smooth even breaths.*

*Notice how your body feels. The weight of it as you sit or lie. Keep breathing in and out, slowly and evenly.*

*Now focus on your feet. Notice any feelings or sensation, tension, warmth, coolness, pain, discomfort. Just notice these feelings, they're not good or bad, they simply exist. Keep breathing smoothly in and out.*

*Move to your legs. Focus on your legs. Notice any feelings or sensations. These feelings are not good or bad. They simply exist in the moment. Keep breathing smoothly, in and out.*

*If your mind starts to wander at any time, that's okay, just gently bring your attention back to your breathing, in and out. Then move back to your body scan.*

*Continue scanning your body, noticing each body part as you go, and any feelings or sensations you encounter. None of these are good or bad – they are just there.*

*Keep breathing smoothly in and out.*

*After you have reached your head and face, take time to notice the feelings and sensations in your whole body.*

*Focus on your breathing, noticing it going in and out. Open your eyes.*

Practise mindfulness regularly. When you are trying to sleep, after a busy or stressful day, at your desk before a meeting, when you're out for a walk. Notice how you feel, the things around you, use all of your senses, be present and pay attention to the moment.



## Sleep

Knee pain may interfere with your sleep patterns. Pain, muscle tension, anxiety and other factors can make it difficult for you to get to sleep, stay asleep or impact on the quality of your sleep. Poor sleep can increase your pain, muscle tension, stress and anxiety, as well as make you feel fatigued the next day.

The good news is that there are lots of things you can do to ensure you get a good night's sleep!

Check your sleeping environment. Your bedroom should be dark, quiet and comfortable. And not too hot or too cold.

Don't put too much pressure on yourself to go to sleep. This leads to anxiety and stress if you don't fall asleep quickly. Feeling anxious or stressed can affect your ability to sleep.

If you can't sleep, get out of bed rather than stay there tossing and turning. Have a warm drink (e.g. milk, not caffeine), do some gentle stretches or breathing exercises, try some muscle relaxation or pleasant imagery, and go back to bed when you feel comfortable.

Develop a sleep routine so that your body clock can build a strong sleep wake cycle. Do this by going to bed and getting up at consistent times each day, even on weekends.

Try some relaxation techniques before bed. These techniques will help you become more relaxed and may help you manage your pain better so that you go to sleep, and sleep well.

Write down any thoughts, worries and anxieties that might be on your mind, preventing a good sleep. Don't take them to bed. Write them down and then put them away. You can deal with them tomorrow.

Be active during the day. Regular exercise and physical activity will help you fall asleep and stay asleep longer.

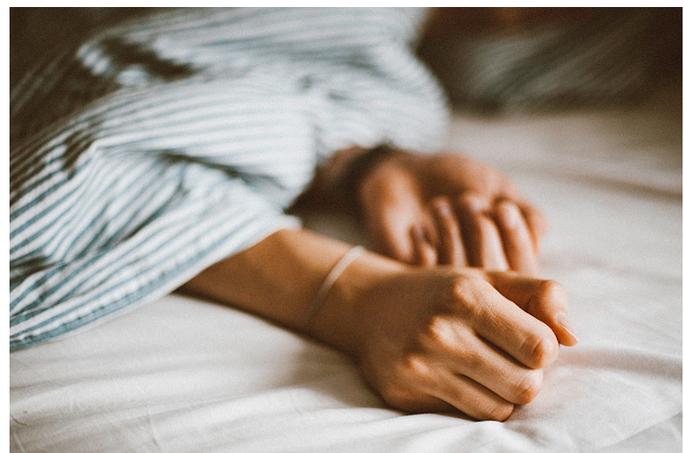
Don't look at the clock. Constantly checking the time can make you anxious and anxiety makes it hard to sleep. Try removing your clock from the bedside, or cover it up at night.

Avoid using electronic equipment and technology when in bed. This includes computers, TV and mobile phones.

Get ready for sleep by winding down before bed. Avoid caffeine and alcohol for several hours before going to bed, as well as vigorous exercise in the late evening. Don't watch TV shows or movies that disturb or stimulate you.

Avoid napping during the day. Daytime naps can get in the way of a good night's sleep. Only nap when you really need to, and limit a nap to 20 minutes.

Try not to worry about your sleep. Many people who have trouble sleeping often worry that their sleep problems are worse than they really are. And worrying makes it harder to sleep. Tell yourself that rest is good, even if you are not asleep.



## Success stories

### John's story:

This is my story. Due to the nature of my employment I was profoundly afflicted in my knees and back. I took all sorts of drugs, had a lot of treatment, but no change occurred. I became a dodderly young man at the age of 64. I was told I needed an operation on my right knee but I kept putting it off out of fear it would not be successful. I increased pain relief drugs to manage. I had to use a walking stick and an electric scooter to go to my school crossing supervisor job. I lost the ability to go up and down stairs and even stand for more than a few minutes. I could not do any round the house chores. I became depressed and had difficulty sleeping. This all started to affect my wife.



In October 2010 I joined a research study. It took a few sessions to get going but (my physio) was caring and strict and I had to maintain a regular pattern of exercise at home. The movement in my knee started to improve. My general wellbeing mentally/physically improved. In the second part of 2011 I was able to stop the use of pain relief drugs and sleeping pills. I am now able to walk up/down stairs without difficulty, to stand for long periods as I do my school crossing supervisor job, where we are not supposed to sit down. I ride a bike every day which I could not do for the past 5 years. I walk every morning or night and the knee does not lock up anymore after sitting. I have added more exercises to the physio's program, which I will do every day for the rest of my life.

I will not seek to have operations because the program (the physio) has got me on has given me normal function of the knee. It has improved my life and wellbeing. I have joined a men's group at a local health centre. When I talk to folk who have leg problems they say "it won't do me any good". My reply to them is "it will, you just have to have a change in attitude, and that thought processes have to change in conjunction with exercise".



### Brian's story:

I have had osteoarthritis for over 35 years, especially in both knees. Having tried anti-inflammatory medication I got some relief whilst using them. The problem was that when I stopped taking them, I experienced pain. As I was lecturing for most of my adult life, it became a major issue as I needed to stand for my presentations.

Having tried hydrotherapy, acupuncture and pain relief medications, I just managed to get by for some time.

The most beneficial results were oddly enough following my retirement when I began a combination of knee strengthening exercises and a course of pain management through the University of Melbourne. It was the Paincoach program which gave me the skills to handle osteoarthritis especially when the pain was at its worst. A combination of relaxation techniques and positive attitude tools gave me the best possible outcome.

As a result, I now go for 2 walks per day, averaging 45 minutes each. This has enabled me to shed off some 5kgs resulting in less stress on my knees and more pleasure as I love going for walks with my wife through the beautiful parks in our area.

## Success stories

### Susie's story:

As a student in my sixties I was required to walk from one side of our campus to the other, twice a day, and found my knee was giving me terrible trouble. It was difficult to walk and I was often late to class. After using a rub-on cream for arthritis, I tried tablets through my doctor, however it did not seem to help much and in fact upset my digestion badly. So I stopped taking these tablets. I registered at student support, and was given a disability notice so I could park close to the buildings.



Once I joined the physiotherapy trial, doing physical exercises as well as other helpful tasks, I found that indeed my knee did improve. Reading the literature I was sent as part of this trial, I found out I did not necessarily need a knee replacement. It was so helpful, doing exercises where I gradually increased weights attached to my legs, seemed to improve my knee and I am certain the whole process has been very beneficial to me. I believe the program has been extremely helpful and I now do not notice the same degree of pain or difficulty.



### Kerri's story:

I was hit by a car some years ago resulting in a broken right tibial plateau. I was told that this may lead to the development of osteoarthritis in the future and that's what happened. However, as I later developed osteoarthritis in my left knee I can't say with certainty that trauma was responsible for the osteoarthritis in my right knee. I subsequently had a total right knee replacement and have had no further trouble with the right knee. I became aware of osteoarthritis in my left knee only after the right knee was replaced when weight-bearing was mainly on my left side.

Regular pain killers such as Panadol Osteo® have little effect for me. If my osteoarthritis gets really bad I resort to non-steroidal anti-inflammatory drugs such as Ibuprofen for a few days but I try not to take any medication for pain. I keep pain at bay with mind and body exercises.

Through trial and error, I have found that Boxing is the best cardio exercise for me because I can vary the impact on my joints to suit my comfort level. I also do Pilates, swimming, walking and cycling. I believe that exercise is extremely important but it's a matter of finding the type of exercise that suits the individual. Previously I was doing aerobics, which I loved, but found it too jarring on my joints. I still do Zumba occasionally because it's so much fun. It does hurt for a day or so afterwards, but as it can't make my osteoarthritis any worse, I feel that the enjoyment at the time is worth a bit of discomfort afterwards.

I have no immediate plans for a total left knee replacement. I know more about managing osteoarthritis with exercise than I did before. I use exercise, including specific knee-strengthening exercises, alongside some pain management skills (distraction, relaxation, rest/activity cycles etc) to cope with the condition. I now have the attitude of just doing whatever I like to do.

## Further information

For trustworthy information about osteoarthritis and management options, you may wish to visit:

-  **My joint pain**  
**Visit:** <https://www.myjointpain.org.au>
  -  **The Western Australian Department of Health's painHEALTH**  
**Visit:** <https://painhealth.csse.uwa.edu.au>
  -  **Musculoskeletal Australia**  
**Visit:** <https://www.msk.org.au>
  -  **Arthritis Australia**  
**Visit:** <https://arthritisaustralia.com.au>
  -  **Knee Pain Info Video**  
**Visit:** <https://youtu.be/o8ZJN56aSic>
- 

For trustworthy information about healthy eating, you may wish to visit:

-  **Victorian Better Health Channel**  
**Visit:** <https://www.betterhealth.vic.gov.au/healthyliving/healthy-eating>
  -  **Arthritis Australia**  
**Visit:** [https://arthritisaustralia.com.au/wordpress/wp-content/uploads/2018/01/ArthAus\\_HealthyEating\\_1805.pdf](https://arthritisaustralia.com.au/wordpress/wp-content/uploads/2018/01/ArthAus_HealthyEating_1805.pdf)
  -  **Musculoskeletal Australia**  
**Visit:** <https://www.msk.org.au/diet/>
- 

For trustworthy information about pain management, you may wish to visit:

-  **The Western Australian Department of Health's painHEALTH**  
**Visit:** <https://painhealth.csse.uwa.edu.au>
  -  **This Way Up**  
**Visit:** <https://thiswayup.org.au>
  -  **painTRAINER**  
**Visit:** <https://www.painTRAINER.org>
- 

For trustworthy information about sleep, you may wish to visit:

-  **Australasian Sleep Association**  
**Visit:** <https://www.sleep.org.au>
  -  **HealthDirect**  
**Visit:** <https://www.healthdirect.gov.au/sleep>
  -  **Victorian Better Health Channel**  
**Visit:** <https://www.betterhealth.vic.gov.au/health/conditionsandtreatments/sleep>
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