

The Disc Report



Understanding spinal discs, keeping them healthy and what to do when pain strikes.

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The Disc Report

Introduction

Chances are that if you are reading this you either have or have had back pain or neck pain.

Back pain is not the sort of subject most people read about voluntarily and developing an understanding around back pain usually arises out of necessity rather than choice!

This guide is not intended as a scientific paper. Instead the goal here is to give you a simple overview of how your back works, how the discs in your spine function and what to do if you get a problem which is not resolving.

At 10Bridge we see patients with acute back pain as well as long term issues. We specialise in non-invasive spine treatment from simple advice to manual therapy.

You can be assured that we have seen a lot of back issues. We have the good sense to be able to apply appropriate strategies to help people get back on their feet and the wisdom to know when other clinicians are better placed to help.

So let's get started with a very quick overview of how your spine works and then we can get to the meat of what to do about your pain!

Yours in health,

Mark Browes
Clinical Director
10Bridge Physio

1 ANATOMY

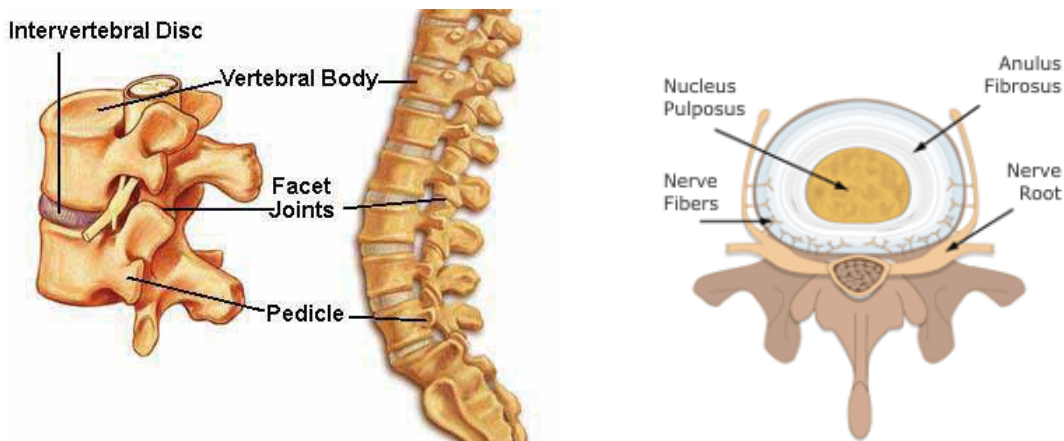
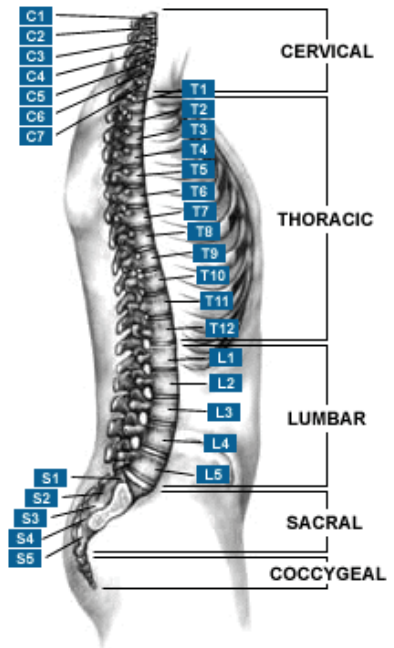
When we think of spines, we tend to think of the skeleton of the spine. The bones or vertebrae in the spine form a column like a stack of cotton reels where each vertebra sits on top of the other.

Vertebrae

Each vertebra has a number as you can see in the diagram. In the lower back or “lumbar spine”, the vertebrae are numbered with an L e.g L5. The chest or “thoracic spine” uses a T the neck or “cervical spine” uses a C and the vertebrae of the sacrum an S.

Now bones need to move and where two bones meet, they are connected at a “joint”. You may have heard of different types of joint such as ball and socket (e.g hip) or hinge joint (e.g knee).

Where the vertebrae meet or connect, there are two key joint types 1/ the facet joints (a plane joint) 2/ the intervertebral disc (a fibrocartilaginous joint)



Intervertebral Discs

We will go into more detail about disc health in section 2 for now, let’s describe intervertebral discs as spongy cushions which separate two vertebrae. Each disc is referenced by the two vertebrae it lies between e.g the L4-L5 disc lies between the L4 and L5 lumbar vertebrae.

The discs are made of an inner toothpaste-like substance which is mainly comprised of water (nucleus pulposus) and an outer fibrous wall (anulus fibrosus) made of collagen. Collagen is a versatile substance which has different properties depending on which part of the body it is being used e.g it is present in the skin, finger nails and muscle fibres.

The spongy intervertebral discs absorb shocks and pressure from the load of our bodies and squash as we lean or bend in any direction. They stop the vertebrae rubbing against each other (bone on bone) and they create a space between the vertebrae. This space is very important.

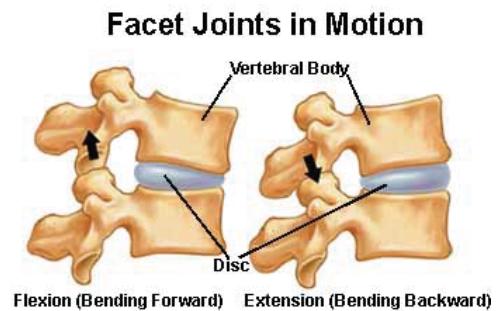
Each vertebra has a hole in the middle and when the vertebrae are stacked on top of one another combine to form a tunnel or canal through which the spinal cord travels down from the brain.

Nerves branch out of the spinal cord at every vertebral level though the space between the vertebrae. The nerves pass closely to the discs and out into different parts of our body. The nerves in the lumbar spine form to create the sciatic nerve.

Facet Joints

The discs absorb loads and squash as we bend, then each vertebra has two sets of “facet joints”. These cartilage covered extensions on the vertebrae provide a limit to movement and form a joint where they meet.

The facet joints are held together by short, powerful ligaments functioning as mini shock absorbers and take on about 18% of the total load applied to the lumbar spine. They glide over one another and limit the amount of twisting and excessive backward leaning (extension) in the spine.



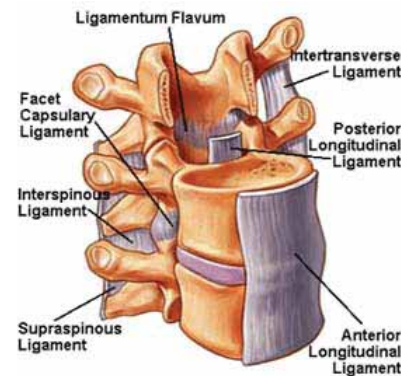
Soft Tissues

Around our bones and joints are ligaments and muscles which hold joints in place and pull and push to give us movement through a joint, whilst bearing a load.

Ligaments

Ligaments are extremely tough fibrous bands made of collagen which act like straps or strong tape to hold joints in place.

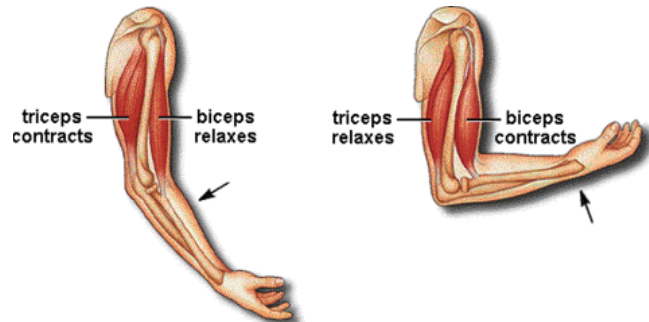
We often hear about ligament damage when a joint experiences abnormal movement such as knee ligament damage. These tough “straps” are not completely stiff, they have a degree of give in them as we move.



Muscles

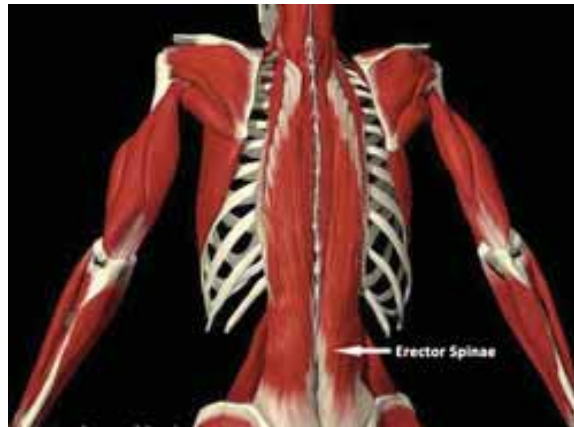
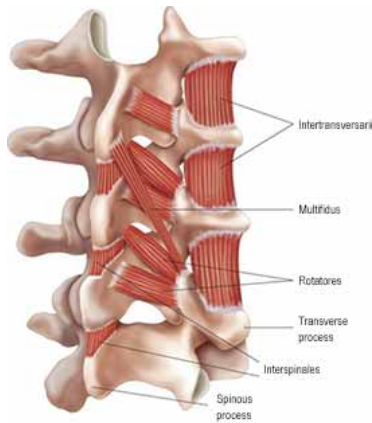
Muscles are connected to bones either side of a joint. They work in pairs.

A good example of a muscle pair is in the arm. If you bend your arm, your biceps muscle contracts whilst the triceps muscle on the back of your arm relaxes.



Then to straighten your arm, the triceps muscle contracts and the biceps relaxes.

The spine has a complex set of muscles connected to the vertebrae which enable it to move in multiple directions and lift and support loads.. Small ones like the “multifidus” are connected to the vertebrae themselves.



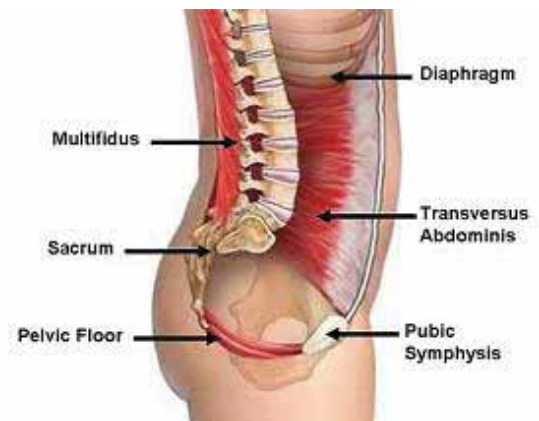
Then covering the smaller muscles we have a layers of larger muscles which give strength to the back such as the “erector spinae” muscles and support movement as well as lifting.

And so to CORE!

No conversation about back pain is complete without a word about the core. Most back pain sufferers are fed up hearing about “working on your core”!

What has the core got to do with the back?!

We will get in to that in more detail later, but for now, the core muscles, notably the “Transversus Abdominis” stop the spine bending forwards into the abdomen. When they contract, they hold the spine in place.



If the core is weak, the spine is less stable and this results in extra pressure being put on the discs and the facet joints.

And why should we care about that? Well, every part of our body is designed with a function in mind. So if something is overloaded or starts doing more work than it was designed for, it will start to break down ad weaken.

And that is where pain starts, rather like a warning light on a car dash board.

Summary

You may be familiar with this anatomy already, particularly if you have had back pain for some time. But like most people growing up, we often take our spines for granted and know very little about it. To beat back pain you will have to do certain things differently and it helps people when they understand how the changes they make will have an impact on the different parts of their spine and what it needs to function optimally. Now let us delve a little more into discs.

2. Spinal Disc Health

As we have described, the discs are spongy shock absorbers which lie between the vertebrae. They support 50 to 60% of the spinal load and so are very important.

All cells in the human body need nutrition and oxygen to function. Whilst muscles have a direct blood supply, it is important to note that the intervertebral discs do not. They are what we call “avascular” meaning there is no direct blood supply. Being avascular, the intervertebral discs can only receive oxygen, water and nutrition from the blood supply of surrounding tissues.



Healthy intervertebral disc shown from above

The transfer of fluid, oxygen and nutrients to the cartilage cells of the disc wall or disc cells (notably proteoglycan cells which hold many times their weight in water) is reliant on two processes - osmosis and diffusion. Think of how water might pass through a dense cloth.

In order to bring fluid (water), nutrients and oxygen to the discs, the body uses a pumping mechanism which operates through movement. As we move by twisting, turning and bending the vertebrae are being tilted back and forth. This causes the spaces between the vertebrae to widen and narrow and this creates changes in pressure.



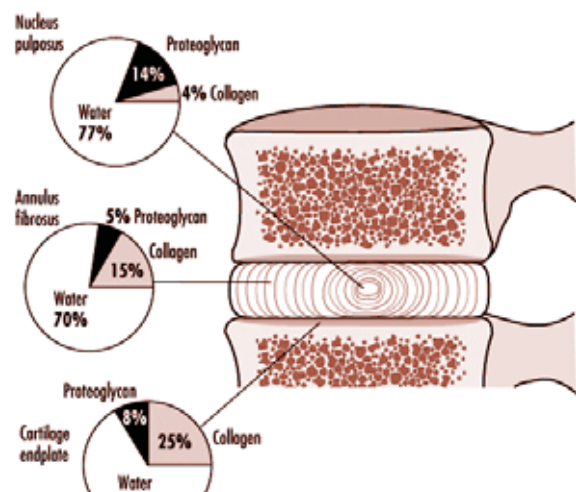
As we move we create pressure changes, similar to the action of an accordion as it draws air in and out as it is squeezed and opened.

The pressure changes create a pumping mechanism which pulls in and pushes out fluids and blood (containing oxygen and nutrients) which are essential for maintaining the cells of the disc. Even moderate movement from activities like walking are enough to keep these pressure pumps working. And as fluid and nutrients are brought in, they are absorbed into the disc by diffusion.

Water

The different structures of the disc are highly dependent on water. Between 10 and 25% of a disc's fluid content is lost during a normal day when the disc is exposed to many pressures. The fluid is restored at night as we lie down and sleep.

Problems tend to arise when the discs (and facet joints) are exposed to excessive or prolonged periods of loading which can weaken them.



Discs can also be negatively impacted when there is a reduction in the supply of water, nutrients and oxygen.

The toothpaste-like centre of the disc (nucleus pulposus) is 77% water. The cells in the nucleus called proteoglycans hold on to the water and it is this water content of the disc which creates what is known as the “hydrostatic” pressure of a disc.



Think of a well pumped ball. The pressure in the ball comes from the amount of air inside which presses out against the wall of the ball.

Water content of discs

This pressure gives the ball its shape and gives it its bounce. But as air comes out, the pressure falls and the ball loses some of its shape and a lot of its bounce.

The proteoglycans in the disc hold onto a lot of water and when the concentration of water is at the correct level, the disc retains its spongy shock absorbing properties.

However, if the water concentration in the disc falls, then rather like a ball which has lost some air, the disc's shock absorbing properties are reduced. The height of the disc can be reduced and the structure becomes weaker.

The proteoglycan cells in the central nucleus of the disc also help to lubricate and nourish the collagen walls of the disc (annulus fibrosus) from the inside. If there is less fluid in the disc (or the disc is damaged), the collagen walls of the disc may dehydrate and not receive adequate nutrition.

This can lead to a drying out of the collagen, small cracks may develop and the walls of the disc can become weaker. This further lessens the shock absorbing properties of the disc making them vulnerable to damage from even simple movements.

As you start to understand how the discs work, as well as messages about staying active, you can hopefully begin to see why it is so vital that we drink enough water. A key anti-ageing message for us all is to stay hydrated by drinking plenty of water to keep our skin healthy. Well, we can't see our discs, but in the same way that our skins need water – so too do our discs.

As we turn to look at pain, we perhaps ought to drink a glass of water quickly!



3. Back Pain

3.1 Simple Back Pain

Simple back pain can develop for a variety of reasons such as age, lifestyle, activity or a minor injury. Whether through overloading certain structures or injury, the body has a natural response to signal a problem and that is pain.



Pain signals are electrical pulses sent via the nerves to the brain. They trigger a guarding mechanism to stop us doing more potential damage and that usually results in us moving less.

Muscle spasm is one such guarding mechanism and that whince-inducing pain is often as a result of muscles contracting in spasm to limit movement.

The body has its own sophisticated healing mechanism and rather like a wound healing itself when left to its own devices, where there is an injury or pain the body works to repair or remove the irritation.

Inflammation is a natural part of the healing process as the body's cells work to repair and remove waste material. Inflammation typically dies down as normal function is restored.

Thus simple back pain can be a short episode until the body has repaired and corrected itself. This is why generally, your GP will recommend you take pain killers because the vast majority of back pain will settle and resolve given a little time.

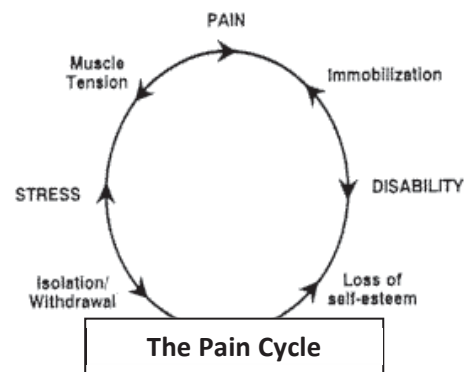
Simple back pain can develop into chronic back pain when the pain is not resolving. Chronic simply means the pain has persisted for more than three months,

3.2 Chronic Back Pain

Chronic back pain is best described as a vicious circle.

If the cause of the pain is not resolved and pain persists, the inability to move properly makes the problem worse.

As you have seen, when it comes to the spine, movement is essential for the proper function of the joints. If pain persists, the nutritional and fluid supplies to the discs are interrupted and the structures of the disc can weaken. To prevent further damage, certain muscles and ligaments take more strain whilst unused muscles weaken from lack of use or stiffen from immobility.



This causes a reduction in mobility in the spinal segments, pressure on structures such as the disc and facet joints, more pain and so on. Psychologically chronic back pain can lead to negative feelings and a sense of hopelessness and sometimes, defeatism.

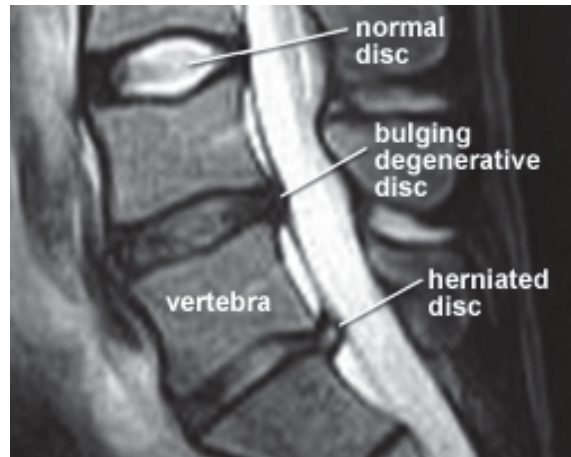
The good news is that in most instances there are strategies and treatments to get off the chronic pain cycle and we will cover in chapter 4.

3.3 Herniated Disc (prolapsed, bulging, slipped disc)

There are a few terms commonly used when describing discs which we can quickly clarify.

A disc bulge is where the outer wall of the disc bulges out from its normal position. The disc wall is not broken and the nucleus material is contained inside the disc. As the disc bulges, it may press against nerves directly or the bulge is associated with a loss of disc height and this may lead to impingement of a nerve as it exits the spinal canal through the gap between two vertebrae.

A herniated disc is the same as a prolapsed disc. This is where the nucleus of the disc breaks through the outer disc wall. There will be a loss of disc height as the disc loses pressure and the nucleus material can press directly on to the spinal nerves causing pain. Or, the material of the disc nucleus may act as a biochemical irritation to the nerve in which case the result is the same ... pain!



A “slipped disc” is an everyday expression which doesn’t have a true medical definition. It can imply a disc bulge or a herniation, usually a herniation.

WORD OF CAUTION – At any given time people are walking around with small disc bulges even herniations in their discs. However, not all discs cause pain, notably if there is no pressure on a nerve. The mechanisms which keep a disc healthy typically work to realign structures and repair injuries. Provided we stay active, those movement mechanisms often resolve the problem before our body has even told us that there is a problem.

How do disc bulges or herniations occur?

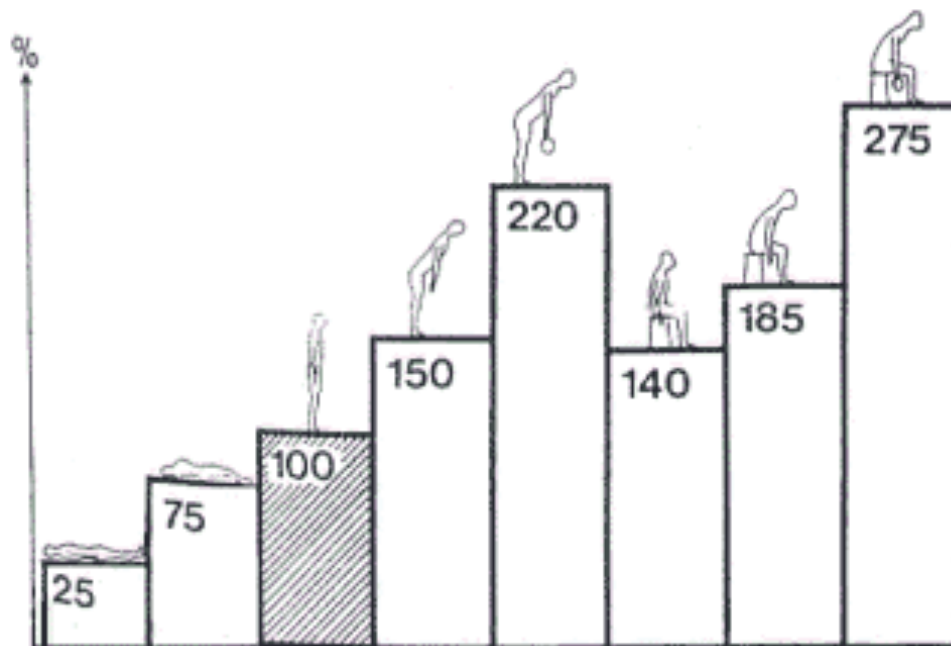
Sometimes we hear people say, “I was only picking up a pencil and my back went”! We don’t have to be in a strong man competition to injure a disc.

There are times when a sudden excessive load can cause a disc to herniate such as in a falling accident. Most disc bulges and herniations are the end stage of a gradual process of degeneration and weakening of the disc wall and a loss of water from the disc.

You have seen that the discs rely on movement for their hydration and nutrition. Prolonged periods of activity mean that the disc is exposed to pressure and is unable to replenish water that it loses. As the cells in the disc (proteoglycans) start to hold less water, the disc wall can start to dry out and deteriorate leaving them weakened.

If we stay in the same position for prolonged periods, usually slumped with the spine pushing outwards, there is a continuous pressure on one side of the disc and less on the inside. This creates weak points in the disc wall which are vulnerable.

We move in different ways but as you can see from the table, certain movements put greater amounts of pressure on the disc.



Pressure in lbs exerted from different positions and postures

Bending, twisting and lifting can put a big squeeze on the disc and like anything, the weakest point will give way first. Thus it is not lifting the pencil itself which causes the problem, rather it is the force exerted from the rotation and lift which puts a huge force on the disc. That is why it either bulges out of shape, or the disc nucleus is forced through the disc wall.

We will look at nerve pain in section 3.6 but bulging or herniated disc are often associated with sciatica or nerve pain the arms.

A sequestered disc is like a herniated disc, except the disc material breaks off and floats freely. It is usually removed surgically.

The good news is that there are strategies to help the body deal with a disc herniation both at home and in clinic.

3.4 Degenerative Disc Disease (DDD)

Disc degeneration starts when there is disruption of blood supply in the tissues surrounding the disc. The blood supply can be impaired by a narrowing of blood capillaries from cardiovascular disease, a build of plaque from smoking or as result of a reduction in movement or physical activity. Any reduction in blood supply will affect the cells inside the disc (proteoglycans) which hold onto water and keep pressure in the disc so that it can absorb shocks.

As less water is held in the disc, the disc loses pressure and starts to shrink in height. The cells inside the disc also start to die. In the attached MRI, the red arrow shows a disc which is degenerating. The discs above contain water whereas the degenerated disc has lost water content.



You will notice that the height of the disc has shrunk considerably compared to the healthier more hydrated discs above.

As opposed to a herniated disc which tends to produce sciatica

Degenerative Intervertebral Disc

symptoms from nerve pain, disc degeneration tends to be associated with dull aching pain.

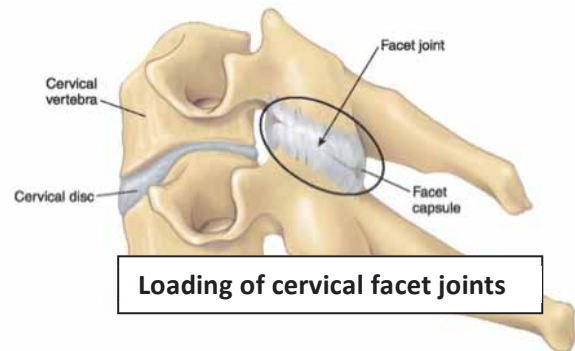
When degenerated, the affected disc will lose 50 to 60% of its load bearing capacity. Thus the other joints, namely the facet joints, will have greater forces acting on them and this leads to pain. Since the facet joints only bear up to 18-20% of spinal load, you can imagine what losing 50% of disc load can do to an already overworked facet joint.

3.5 Facet Syndrome

In the spine, facet joints link the vertebrae and are important for preventing excessive rotational and twisting forces which would damage the discs. They also share some of the load bearing of the spine.

When the spine rotates, the ligaments connecting the facet joints are by far the most strained among the various spinal ligaments.

When there is a loss of mobility in the spine, the facet joints bear a greater load than normal. This is particularly the case if there is some imbalance in the body and one side of the spine takes more strain than the other.



Imbalance in weight distribution not only adds to the stress borne by the facets but effectively deteriorates bone and cartilage. Constant movement on these worn structures activates an inflammatory reaction to the joint which is full of nerve endings. The result is chronic pain as the body continuously sends pain signals to the brain.

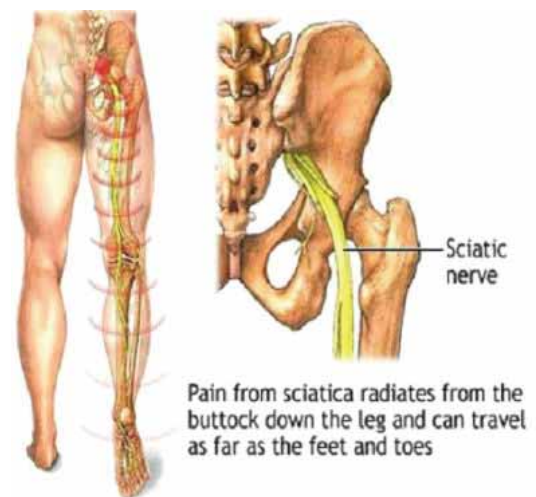
3.6 Sciatica and nerve pain

Sciatica isn't a disorder in itself. Instead, it's a symptom of another problem involving the nerve, such as a herniated disc.

It can be as mild as a small ache in the lower back or as intense as numbness and/ or pain which travels down the buttocks and leg to the foot. The sciatic nerve is a combination of a group of nerves coming out the base of the spine (lumbosacral) and come together to form one big nerve.

This nerve is the sciatic nerve and is about the size of the little finger. It runs all the way down to the feet, branching off to supply muscles and other tissues.

Sciatica can be caused by a disc bulge or herniation pressing against the nerve or nucleus material chemically irritating the nerve. It can also be caused by disc degeneration where a loss of disc height causes nerve impingement since the space between the vertebrae is reduced leaving less room for the nerve to pass freely.



Nerves exit the spine at different levels and travel to send signals to specific parts of our body. The position of the pain in the legs or buttocks is an indicator of the spinal level where the problem lies. Thus a disc problem such as L5S1 will see pain at a different site to the L2L3 disc.

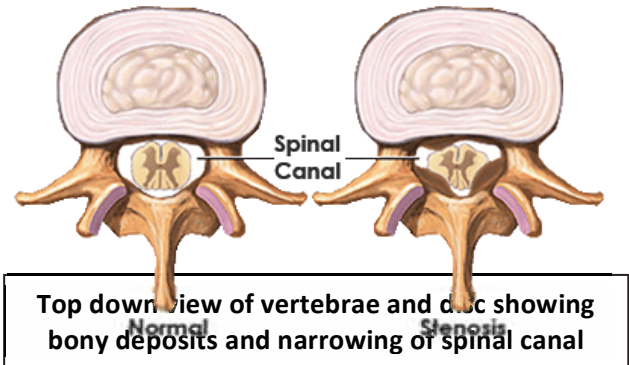
Nerve pain from the neck. In the neck or cervical spine, nerves exit the vertebrae in the same way as the nerves in the lower back or lumbar spine. The nerves which control our arms and hands exit the neck and any form of impingement, pressure or irritation can lead to pain in the arms, numbness or pins and needles.

3.7 Spinal stenosis

Spinal stenosis refers to a build up of bony deposits in the vertebrae. It is typically associated with the ageing process. As we get older, in the same way that our skin ages, so too do our discs. Everyone will have degenerative discs to some degree, it goes with the territory unfortunately.

In some cases, the loss of disc height as we lose water leads to more load pressure being exerted on the vertebrae.

The body reacts to the increased load by laying down more bone to reinforce the vertebrae. In some cases, the extra bone can narrow the gap where the nerves exit the spine and if the bone pinches against the bone, it can cause sciatica.



4. Treatments

There is a wide variety of treatments for disc problems and back pain and different clinicians will recommend different approaches. The different approaches may not be better or worse and hopefully lead to the same end destination.

The key thing we must say is always get advice when you have pain. Doing the right thing is important, but in many ways it is more important NOT to do the WRONG thing!

4.1 Pain Management At Home

When you have a disc problem or simple back pain, the first thing the NHS recommends is to take some anti-inflammatories such as ibuprofen. Relieving pain is the first step to being able to move, because if you can move, the mechanisms which keep our backs healthy can operate.

You can also use some simple pain relieving modalities. Whilst the evidence supporting the effectiveness of certain modalities is not always proven, we can look at some of the methods because it is important for you to know what your options are.

TENS machine

A TENS machine can really help alleviate pain temporarily. TENS machine prices range from around £20 up to £50 or £60 for premium digital models.

They are battery operated units which have electrodes placed on the skin to allow small electrical pulses to be passed into the painful area. Pain is an electrical signal passing up a nerve from the point of pain to the brain. It is a communication mechanism which says – “hey, this is where the pain is”. We know that!

The TENS machine sends more signals up the nerve and overrides the pain message. The TENS signals are not painful, they feel tingly but you get used to them. A TENS machine can be a good way to dampen down pain signals allowing you to get on with your day.



Topical Creams

There are various creams for back pain. Volterol is advertised as a cream which includes anti-inflammatory to reduce pain. Others such as Biofreeze help to cool the painful area. It can be helpful to apply certain creams at night if you struggle with sleep.

Cold Packs

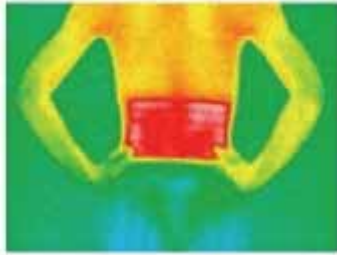
Cold works in two ways. When we are exposed to cold, the body narrows the blood vessels (vasoconstriction) at the extremities to keep warm blood in the body for the organ functions.

If we apply something cold to one area of the body, the body constricts the blood vessels and cold “numbs” the pain from a loss of sensation. When the cold is removed, the body floods the cold area with blood and this can serve to help flush out waste materials from the painful area and bring oxygen, nutrient rich blood into the painful area. Cold works very well where there is inflammation. You can use gel based cold packs or frozen peas.

Heat

Heat helps to increase blood flow. When exposed to heat the body wants to transport the extra heat away from the warm area to keep the temperature in that area at the body's natural temperature. The increased blood flow brings oxygen and nutrients to help support healing whilst flushing waste products away. Hot water bottles and wheat bags provide some warmth.

Infrared heat



New carbon fabric infrared pads like TherMedic give a constant heat which penetrates deeper into tissues than hot water bottles without burning. They bring more oxygen and nutrients than standard heat packs. Plus, there is growing evidence that infrared stimulates cell healing and reduces inflammation in a way that standard heat pads do not (thermedic.co.uk). Use them twice a day for thirty minutes. They are particularly good for aching back pain.

Exercise

Exercise doesn't mean army boot camp! The purpose of exercise is to get your body moving because that is what it was intended to do. Just walking for five minutes is something to get you going. It doesn't matter if you are heavier than you would like to be, provided you aren't in pain this is your basic step one.

It's about having a routine and sticking to it. It helps with confidence too because provided your plan is achievable and you do it, you get the physical benefits and your mood will most certainly lift.

Walking more than once for as long as is comfortable and before you get pain is something which can have a big impact on how you feel and how your body deals with pain. So that is your STEP ONE, quite literally.



Gym Goers - In our experience, avoid weight training unless you are under the guidance of a clinician or specialists. Whilst some things may help you, doing the wrong things will make your condition worse. Gentle movement on a cross trainer limits impact and gets the body moving at a pace you control.

Swimming is very useful but we know that despite its benefits many people just don't like to go swimming. If you have a pool near you, the second half of lunch time sessions are usually quiet as is the last half hour in an evening. You may have the pool to yourself.

Aqua aerobics - since you are suspended in water, you won't impact your joints as you move. So this is a great way to get the benefits of raising your heart rate and moving your joints at the same time, without putting pressure on your spine. And you will probably find other people in a similar situation to you because that the nature of water based exercise is that it is for people who don't want to or who can't tolerate impact exercise, however minor.

Pilates - it is well worth finding a local pilates teacher, preferably one with a clinical background so you can be sure that in the early days of exercise, you have the correct technique and don't do the WRONG things.

Yoga – gentle yoga is a great way to free your spine as you overcome back pain because it stretches the tissues around your back and helps keep your spine open and mobile. At the same time the strengthening of yoga helps to support your spine.

Pilates and Yoga help with your core, they strengthen the muscles of your back and they help to open stiff and tight spinal segments. Think of them like giving your discs the space to breathe.

Don't ever be embarrassed if you haven't done it before, everyone starts somewhere. People won't judge you because most people begin doing some form of exercise out of a need. There is great camaraderie too being part of a group and a group gives you discipline.

If eating more fruit and vegetables is good for your health and weight control, pilates and yoga can do good things for your spine.

Other exercises – the general rule is, whatever you like doing which doesn't hurt you is going to be good. Avoid high impact highly energetic classes which put a strain on your spine, if in doubt, don't. If in doubt ASK.

If you have never exercised in your life, it can be hard to get going. Ask for some guidance to help find what works for you.

Hydration

We looked at water in chapter 2. Most people do not drink enough water so as part of your daily habits, find away to get your two litres of water each day. People often get tired in the afternoon. If that sounds familiar it could well be because you haven't drunk enough water. Coffee and Red Bull are not the answer to tiredness in most cases.

So if it gets to 3pm and you haven't drunk much, drink three glass of water – “*three at three*”. And keep drinking to hydrate your discs. It will help your skin too!

Sitting

It is worth looking at how you sit and how long you spend sitting. If you are in pain movement is difficult. But sitting in bad posture puts undue stress on the discs by pressing the nucleus of the disc against one side of the disc wall. Muscles aren't activated so they do not provide support and when not used, they weaken.

If you are sitting badly and then you spend hours without moving, you can consider that you are literally squashing the life out of your discs. Not only are you weakening the disc walls you are also preventing water reabsorption into the disc which comes from the movements described in chapter 2.

Many people work in an office. Look for a good chair from a reputable supplier who can advise you on the right chair which gives you lumbar support. Perhaps more important than the chair, get up every 30 to 40 minutes and move.

Google has a timer alert if you feel you are going to forget. You may have work pressures, but if you don't move, your back is going to pay a heavy price. Get up and move around often! You can use the move to get a glass of water! If you really need to spend hours at a desk, you may invest in an upright desk so you can stand and work. You can adjust and take breaks by suiting down.



Sofas – sofas are so enticing! But they often offer little support. If you are going to spend time on a sofa, ask a clinician about how best to sit. The Sitting Well company produce cushions which actually support your lower back and they still look pretty. Well worth a look. www.sittingwell.co.uk

Sleeping

You have to have a good mattress and pillow which supports good sleeping posture. Whilst we sleep our bodies relax and the space between the discs opens, allowing fluid and nutrients into the area so the cells can receive nutrition, oxygen and water. Find a bed which works for you and a pillow, perhaps a memory foam pillow which supports your neck.

Specific exercises for back pain you can do at home.

There are many exercises for back pain and if you have pain, it is recommended that you consult a clinician to ensure you are doing the correct exercises. In the Appendix, we detail six exercises which are commonly carried out by people who have had or who are dealing with back pain.

It is not a comprehensive list but doing something consistently is better than doing a lot, or very little inconsistently.

4.2 Manual Therapy (and clinical exercise)

Manual simply means with the hands.



It has become a cliché to talk about addressing the cause of pain. The causes can be very complex but stiffness and immobility in the spinal area are key components which need to be addressed at the outset.

When people suffer with pain, they may move differently to accommodate the pain or lack of function in one area of the body.

If you have ever had or know someone who has had a broken arm. After time in plaster, the arm does not move freely because it has been stuck in one position for some time. Because they haven't been used, muscles weaken and shrink and the joints become stiff.

A manual therapist will aim to free the areas which are stuck and help to get the joints moving through a normal range of motion. From here the word "exercise" usually pops up because once moving, it is important that certain muscles stay active so that we have normal joint function.



We are interested to get the joints moving but we need to be able to move and carry and bend and twist normally, such as at a trip to the supermarket where you will want to lift bags. A degree of muscle function is essential to support the joint.

and exercise are not enough, the next step is usually IDD Therapy Disc Treatment.

4.3 Pain Management

Pain management usually refers to prescription medication intended to block pain in a variety of ways. Drugs are prescribed by a doctor and are intended to give relief so that you can go about your life. They do not address the causes of pain such as compression and immobility in the spinal segment.

4.4 Injections

There are different types of injection given to patients suffering with a herniated disc. The purpose is to ease inflammation with a goal to provide pain relief.

The pain might be in the lower back or neck, or classically an injection can be given to try to ease leg pain (sciatica) or nerve pain in the arms.

An injection does not treat the disc herniation itself or address the causes of a problem. They are usually given to provide temporary pain relief and to create a pain free/ reduced pain window which allows more movement and treatment to address the causes of the problem.



The types of injection typically given are:

- Nerve Root Block - An injection is given to block pain signals in the spinal nerves and involves injecting anaesthetic and anti-inflammatory steroid into the space around the nerve.
- Epidural Injection - This is an injection into the space around the spinal cord where nerves can become inflamed and cause pain. The epidural space is the outermost part of the spinal canal. Steroid is injected to ease inflammation and may provide temporary or long lasting relief.
- Facet Joint Injection - A disc bulge or herniation can lead to a reduction in the height of the intervertebral disc, rather like an underinflated bicycle tyre which loses some of its height as it bulges outwards. In this instance, the facet joints taken on more load and can become inflamed. The injection aims to ease inflammation and thus pain.

Injections on their own do not address the causes of a herniated disc. However some patients may benefit from spinal injections to achieve a degree of pain relief. Manual therapy and IDD Therapy can be used one week after an injection.

4.5 Spinal Surgery

Spinal Surgery is used to treat herniated discs when all non-invasive options have failed to relieve the condition, or when there is a risk of long term nerve damage.

“Decompression” surgery is used to relieve pain by surgically removing part of the disc or bone of the vertebrae to take pressure off



the spinal nerve and remove the source of irritation. There is a wide variety of surgical techniques from minimally invasive techniques to open surgery.

- Laminectomy - This involves the partial or complete removal of the lamina bone to create space for spinal nerves. The lamina is the thin part of the bones that make up the vertebrae which protect the spinal cord.
- Discectomy - This is the most common surgery to relieve leg pain caused by a herniated disc. It involves removing the part of the disc nucleus which has pushed through the disc wall and is pressing on or irritating the nerves.
- Spinal Fusion - When a disc degenerates or the herniation renders a disc beyond a condition of being able to fulfil its shock absorbing function, a spinal fusion may be performed. Here two vertebral segments sandwiching the disc are fixed together using screws.

The stabilisation removes movement and creates space for the nerves to exit the spinal column.

Spinal surgery can be very effective in helping people. It is usually the last option for patients when other treatments have not worked. Spinal surgery is complex and naturally it is not without risks. A surgeon will give you a clear understanding of what is the best option for a particular condition.

5. Life After Pain

When back pain subsides or clears, it is very easy to forget the negative impact it has on our lives. Where back pain is the result of lifestyle or general ageing, it is very easy to revert to the routine which led to the problem in the first place.

Activity and hydration are extremely important for your back and your discs along with not sitting (slouched) for prolonged periods. Doing things on our own can be difficult so we always recommend finding a group where you can ensure you have some structure and discipline to at least get you started.

When we looked at back pain, we spoke of a dreaded vicious circle of back pain leading to immobility, stiffness, deterioration and more pain. If you can progress on to a path free of pain, you have the opportunity to get in a virtuous circle.

The virtuous circle helps to keep you active, feeling positive, sleeping better, with better mood, making you feel like staying active, which keeps you feeling positive and so on.

End Note

This guide has been developed from an understanding of the necessity for patients suffering from back pain to be supported and monitored rather than be left alone “to get on with it”.

During any rehabilitation programme the aim is to target the specific causes of pain with a clear and consistent strategy. There is no point dabbling in helping your back, in the same way going on a fitness weekend will not give you a long term fitness transformation.

It is about progressive and consistent steps. We hope that this guide has given you a better understanding of how your back works and what needs to happen to keep it working well.

We believe that the only stupid question is the one we have which we don't ask, so if you need help, please ask one of the team at the clinic.

Thank you for reading.



APPENDIX - Home Exercises

Here are six exercises you can do every day to release your spine and activate your muscles. Activate sounds active! but all we mean is that when you have back pain, some muscles just haven't been working. You have heard "use it or lose it". Well this isn't about a body building competition, simply that we need to wake some muscles up so they actually start to contract and relax normally,

If you haven't used them for a while, this is a little like trying to get a teenager out of bed in the morning. It will groan and kick and scream but if you persist it will eventually get up and get going!

Exercise 1 – Cat & Dog Stretch



This is a simple spine mobilisation exercise used in many exercises but with origins in yoga.

- Knees on the floor and hands under your shoulders
- Pull your tummy in towards your spine
- Take five breaths
- Relax, then arch your back and look upwards
- Hold for five breaths.
- Repeat five times

Exercise 2 - Knee to Chest



This exercise stretches out your lower back and the piriformis muscles in your buttocks.

- Lie on your back with your knees bent and your feet flat on the floor.
- Bring one knee to your chest, keeping the other foot flat on the floor (or the other leg straight, whichever feels better on your lower back).
- Breathe five times.
- Relax and lower the knee to the starting position.
- Repeat 2 to 5 times with each leg.

As you progress, you can draw both knees into your chest, hold for five to ten breaths, relax and repeat for a total of five times



Exercise 3 - Downward Facing Dog & Lumbar Extension

These two exercises go together because you can transition between the two.

Downward Facing Dog



- Begin on your hands and knees with your fingers spread. Align your wrists directly under your shoulders and your knees directly under your hips. Stretch your elbows and relax your upper back.
- Exhale as you tuck your toes and lift your knees off the floor. Reach your pelvis up toward the ceiling and gently begin to straighten your legs, but do not lock your knees.
- Bring your body into the shape of an "A."
- Now press down equally through your heels and the palms of your hands.
- Draw your chest toward your thighs as you continue to press the mat away from you, lengthening and decompressing your spine.
- Hold for 5, 10 or 50 breaths.
- To release, exhale as you gently bend your knees and come back to your hands and knees.
- Repeat three to five times

Lumbar Extension



- Lie on the floor with your legs behind you.

- Bend your elbows and spread your palms on the floor beside your waist so that your forearms are relatively perpendicular to the floor.
- Then straighten your arms and simultaneously lift your torso up and your legs a few inches off the floor on an inhalation.
- Keep the thighs firm and slightly turned inward and buttocks firm.
- Hold for two to five breaths and relax
- Repeat three to five times.

Exercise 4 - Lumbar Rotation Stretch



- Lie on your back with your knees bent and feet flat on the floor
- Slowly lower your knees to one side, hold for five breaths
- Bring your knees back to centre and lower to the other side
- Repeat three to five times

Exercise 5 Plank or Knee Plank

The plank is an exercise which simultaneously strengthens the muscles of your back and your core. It's fair to say that many people don't like it, because the sound of it is negative. But before you progress to loving the plank, start with a simple knee plank.



- Lie on the floor, lift your shoulders and come up on to your forearms.
- Now lift your torso but keep your knees and toes on the ground
- Hold for five breaths and relax.
- Repeat three times.

As you progress, you can increase the number of breaths to fifteen or more as you are comfortable.

If you are comfortable, you can progress to a full plank where you lift your hips and knees off the floor. Hold for five breaths then fifteen breaths and repeat three times.

Exercise 6 – Pelvic tilt exercise



The pelvic tilt exercise strengthens your abdominal muscles.

- Lie on your back, knees bent with feet flat on the floor
- Clench your buttocks to tilt and lift your pelvis upwards whilst engaging your abdominal muscles
- Hold for two breaths, relax.
- Repeat three to ten times.

An extension of the pelvic tilt is to pull your buttocks off the floor and rotate your pelvis upwards. Hold for two breaths. Lower, relax and repeat three to ten times.



Exercise images courtesy of Physiotec Ca

Diary – to keep you motivated, many people use a diary to record when they are going to do their exercises and then to tick them off. These can help you get into a habit of daily exercise. As we know, it takes 30 days for something to form a habit, so set yourself a 30 day goal and you will see benefits.

IMPORTANT – These are exercise guides and you should always seek medical advice if you have a confirmed disc problem. It can be very useful to work with a therapist to get a simple exercise programme you can do at home every day which work for you.

END