

# How to **Choose** an **Office Chair**



There are many types of office chairs and many factors that influence the choice of which chair to use.

Ergonomic chairs that offer better leg, pelvic and lumbar positioning have become popular, but they still have their own drawbacks. Using one of these chairs can be taxing on your muscles and may take some getting used to.

Here, we look at the pros and cons of various chair options.

## Kneeling Chair/Stool

Research supports the use of kneeling chairs as they can improve the curvature of the lower spine. We know that having the correct posture at one end of the spine, e.g. pelvis, leads to better posture at the other end, e.g. head/neck. For this reason, kneeling chairs are said to aid both the correct lower back position, as well as the upper body position. In reality, this is only true if your desk and the rest of your workstation are set up correctly, and if you don't slouch.

Kneeling chairs (often called stools) have a great advantage over normal chairs in that you don't have to have your feet on the floor when using one. This means they can be adapted to almost any height of desk as the elbows can always be placed in the correct position. They are also generic in that normally only the height needs to be adjusted, so they work well for multiple users at one desk. However, it is only practical to use kneeling chairs when wearing trousers as the central bar is between the legs.



### Advantages:

- Correct leg/pelvic/lumbar position
- Do not need feet on floor
- Adjustable to almost any desk
- No individual adjustment so multiple people can use

### Disadvantages:

- Anyone with knee problems is excluded.
- Need to wear trousers to use
- Tiring on spine muscles

## Saddle Chairs/Seats

The saddle chair has become the seat of choice for dentists and anaesthetists because they are shown to reduce spinal pressure and therefore prevent spinal injury. This is a common problem in these professions due to the long periods spent sitting. Dentists and anaesthetists also have to lean forwards and so cannot use the back of a chair.

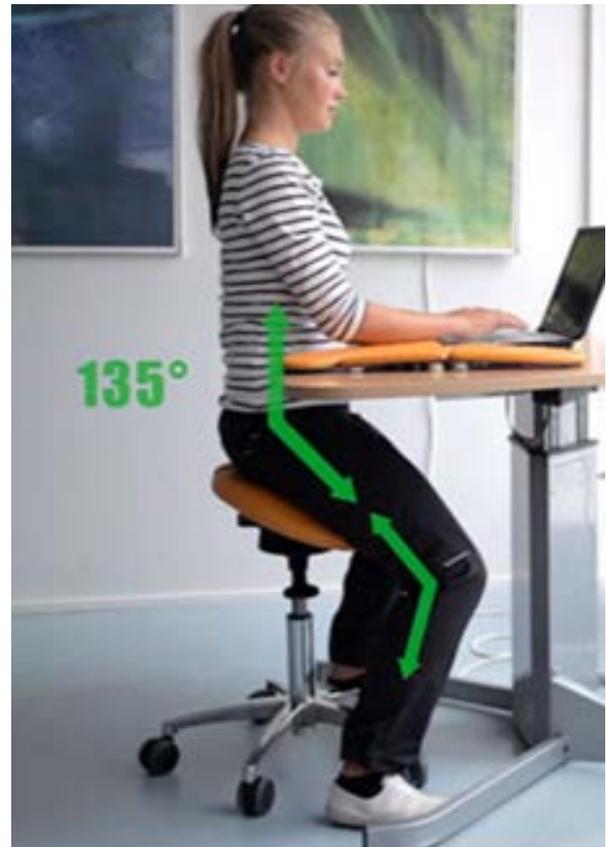
The use of saddle chairs (shown) promotes better spinal postures, including those in the upper body, head and neck. Scientific literature supports the fact that these chairs reduce the risk of injury even compared to other ergonomic chairs.

### Advantages:

- Correct leg/pelvic/lumbar position
- Sit like an ordinary chair
- No individual adjustment so multiple people can use

### Disadvantages:

- Generally need a higher desk or preferably a height adjustable one.
- Limited to wearing trousers only
- Tiring on spine muscles
- Expensive



## Exercise Ball/Ball Chair

The use of a ball or ball chair has risen in popularity in recent years, as they have been shown to improve spinal posture and increase the use of the spinal muscles, leading many people to say it is like exercising at work. Scientific research has indeed shown that the muscles of the lower back do work harder when sat on a ball, however this is negated by the spine shrinking significantly when sat on a ball for as little as one hour.

Ball chairs do not seem to have the same muscle activating effects on the upper body. Despite many people having their arms in a better position whilst using a ball chair, the trapezius muscles in the neck/shoulders are not improved.

Ball chairs are made for height ranges, not each person, so should be chosen for individuals. They are also large and cumbersome to store when inflated, and most scientific studies agree that the advantages of ball chairs are outweighed by their disadvantages.

### Advantages:

- Better spinal posture
- Increased muscle activity

### Disadvantages:

- Spinal shrinkage after one hour
- No height adjustment
- Large and cumbersome
- No positive effects on upper body
- Trousers only
- Nearly everyone reports discomfort after an hour



## Ergonomic chairs

There are many different types of ergonomic chairs and, despite the fact they are designed to support the whole body, few have all the available adjustments of the one below.



A good ergonomic office chair will look similar to this and will have enough adjustments to suit most people.



There are a number of considerations when choosing a suitable ergonomic chair.

### 1) The chair should fit you.

The seat pan should be at least one inch/three cm wider on each side than you are.



The seat pan should allow you to sit touching the back of the chair with a one inch/three cm gap behind your knee – if it is too deep it can restrict circulation and cause knee problems.



A cushion shaped to fit your spine can be used, but this does make the shape of the back of the chair redundant.



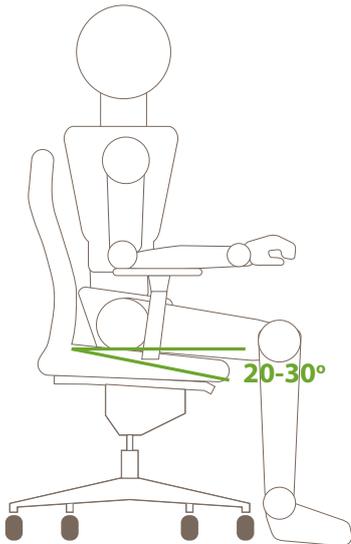
## 2) The chair should be adjustable for height.

Pneumatic adjustment is the norm nowadays as it allows for small adjustments whilst sat in the chair. As a general rule, if you stand in front of a chair with its height adjusted so the chair pan is level with your knees, it should still be able to go both up and down.



Seat pan tilt:

Tilting the seat pan to allow the thighs to point down is advantageous for the lower back/lumbar spine, so adjustment of the seat pan for tilt - up to 30 degrees - is always an advantage.



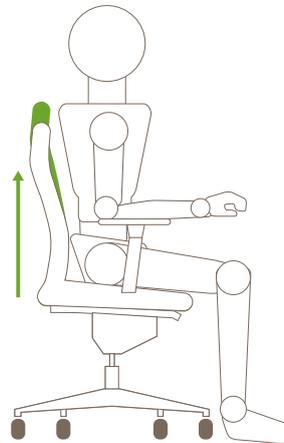
If tilt adjustment is not available, a cushion designed at the correct angle can be used. The cushion should still fill the criteria above - it should be wider than you, fill the seat from front to back and not hit the backs of your knees.

Standard cushions often don't match all of the criteria but, on balance, the 'thigh down' posture is much better with a badly fitted cushion than the flat posture, as long as it doesn't hit the backs of your knees.



## 3) Seat back

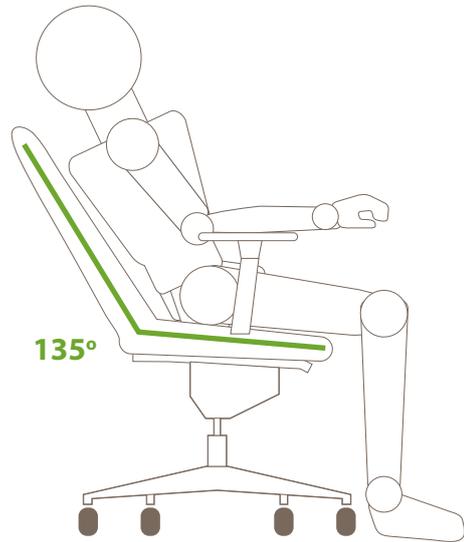
In an ideal world the seat back would be the right height for you, finishing just above shoulder height. Some chairs have height adjustable backs but many don't.



To compensate for this, many chairs have oversized backs, which is fine as long as they support you in the most crucial places.

Some ergonomic chairs have backs which adjust forwards and backwards in relation to the seat pan. This adjustment is simply to set the thigh length/seat pan depth and is very useful if many people of differing heights use the same chair, but is not necessary if you are the only user.

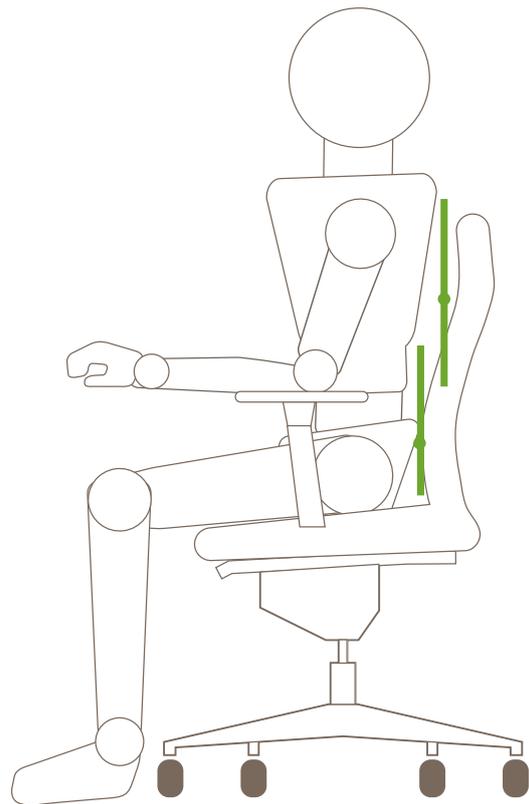
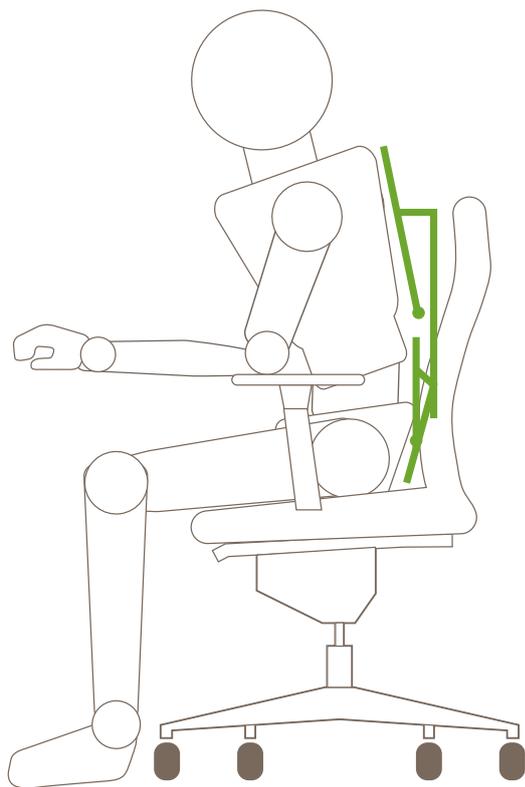
The ability to adjust the seat back from fully upright may be an important consideration if you intend to use the reclined seated posture. Ideally, you should be able to recline the seat back to an angle of 135 degrees (although most people prefer 110 degrees).



The use of supports on the backs of chairs is the main difference between ergonomic chairs and ordinary chairs. If, when sitting with 'optimal' posture, you still require support because your back muscles cannot maintain the position, you need to consider the main lumbar and thoracic curves of the spine. Researchers argue about how the lower back should be positioned and claim there are four ways of sitting on a chair for your lower back.

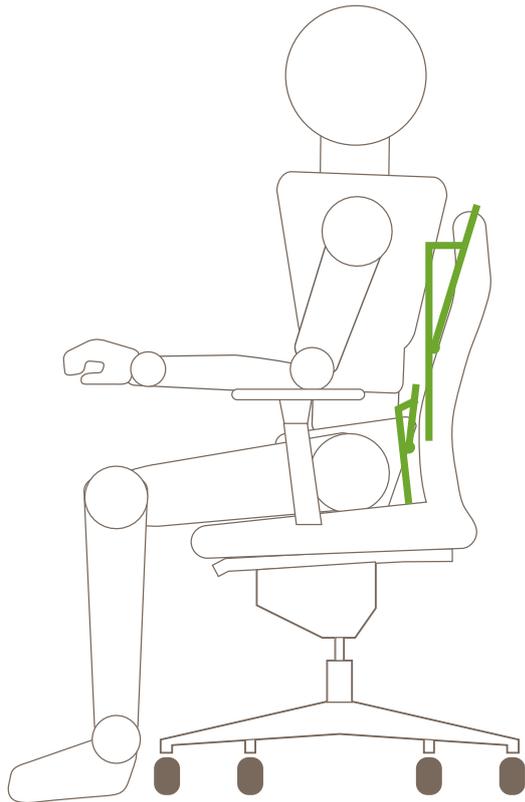
Slumped posture is the most commonly seen. This is considered to be a bad posture which increases spinal pressure and has been said to lead to back injury over time, so should therefore be avoided.

Flat posture is where the lower and upper backs make a straight line. In this position there is little muscle activity and the whole spine will require support from the chair. This posture has been advocated by some authors.



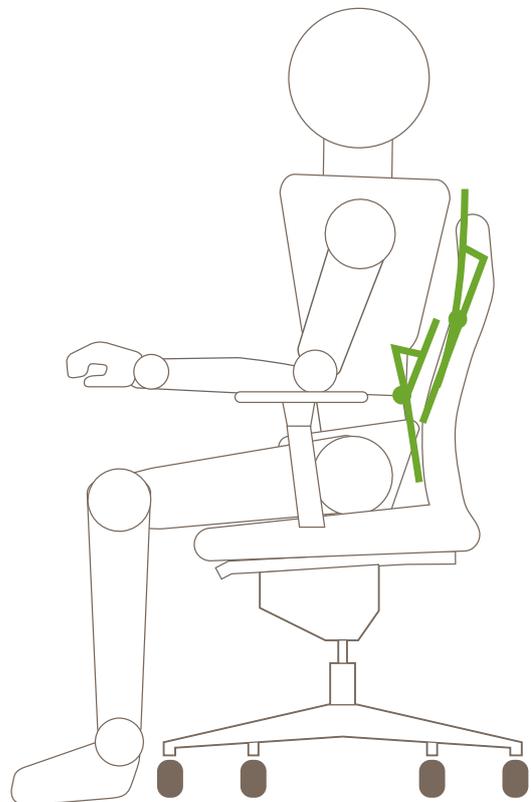
The main issue with this posture is the increased lumbar spine disc pressures, which means it is not popular amongst the medical and rehabilitation communities.

Long Lordosis is a posture which creates a curve in the lower back that carries on at the same angle into the rib cage (thoracic spine). This posture has the advantage of reducing lower spinal disc pressures.



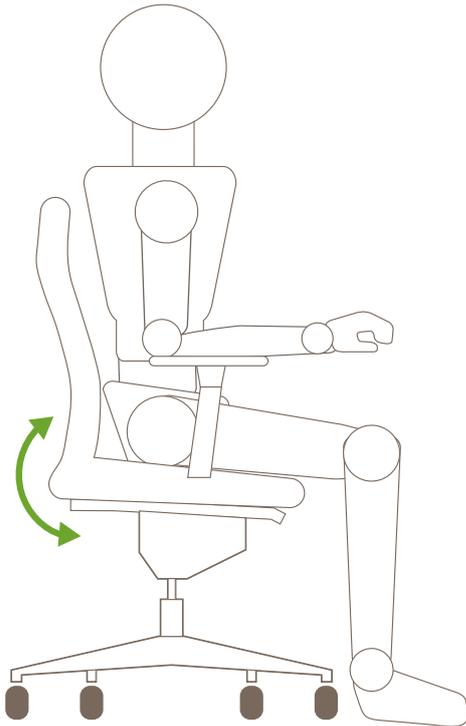
The main problem with this type of posture is that it is very difficult to attain and then maintain. Studies have found that this posture needs extensive coaching by an expert and that many people simply cannot achieve it with most being unable to maintain it on their own.

Lordotic is the posture most people agree is the best position for the lower back, as well as the rib cage, thoracic spine and the neck, and is the one we are told to stand in. In the lordotic posture the lower back curves one way and the rib cage curves the other, which offers the advantage of reducing stress on the discs in the lower back, keeps the centre of gravity over the pelvis to reduce muscular work and strain and puts the neck in a neutral position.



This last posture is generally considered to be the best because the curves in the spine mean the lower back would be away from the chair back if the back of the chair was just straight.

Having a chair back which fills this curve is what most people consider a key factor for an ergonomic design. Obviously everyone is a different shape and some chairs have a fixed support - or none at all - so they will either fit you or they won't. Chairs that are said to be ergonomic often have an adjustable support, meaning different people can use them despite differences in their sizes and shapes.



If your chair has an adjustable lumbar support, it should fit into your lower back and create a curve away from the back of the chair. The key here is how big the curve should be. In tech speak, the best angles are between 3.1 and 3.6 degrees but how do we achieve this in the real world?

Many people recommend trying chairs with built in back supports and seeing if you like them. However, how a chair feels in the first five minutes of use can be very different to how it feels after an hour. To confound the issue, some people have a naturally bigger curve at the bottom of their spine, whilst others are much flatter.



As a general rule, if you were to sit fully back and press your back flat into a straight chair, the amount of curve you need is the equivalent of pushing your own hand flat into the small of your back between your lower back and the chair.

If you can't get your hand into the gap comfortably then you don't have enough curve. If you can get your forearm into the gap then the curve is too big. Ideally, your chair back will be shaped just enough to fill the gap. Some chair backs have a section that is adjustable in depth for different sizes of curves (also often found in car seats). This lumbar support can often be adjusted for height; in some cases, the whole chair back can be adjusted for height.

If you cannot get a chair with correct lumbar support, there are devices to help maintain the lumbar curve. Arguably the simplest one, as advised by many clinicians, is the use of a small rolled up towel. This is also a good way of gauging how much curve you need before buying a chair. Simply use a flat backed chair (make sure it is the right seat pan depth) and put a small rolled up towel into the curve of your lower back. The towel can be rolled less or more to create varying sizes of curve until you find the right one for you. This method has the advantages of being cheap, readily available and almost infinitely variable, but is not a long term solution as the towel falls away when you stand and will squash flatter and flatter over time.

More formal devices include:

- Lumbar roll

A foam roll that sits in the small of your back maintaining the curve, and is available in many depths.



- D Roll

A 'D' shaped foam support that does not push you as far forwards, and is available in many sizes.



Larger



Smaller

- Lumbar cushions

Shaped lumbar cushions of various sizes, shapes and designs.



Solid



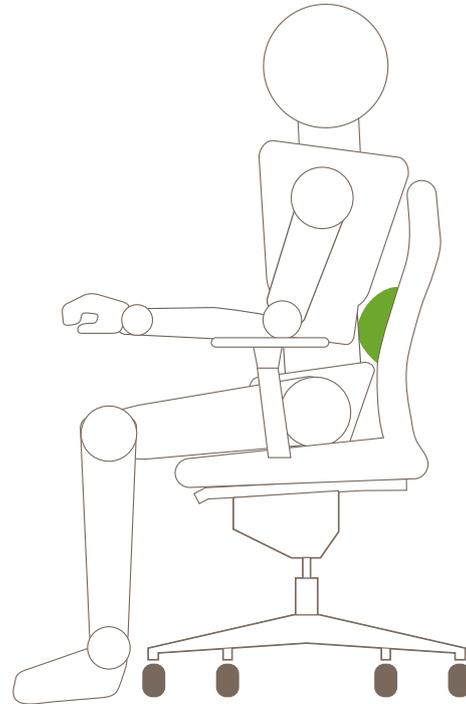
Ventilated

#### 4) Supporting the thoracic spine or rib cage

Ideally, a chair back should reach the height of your shoulders as you sit upright.



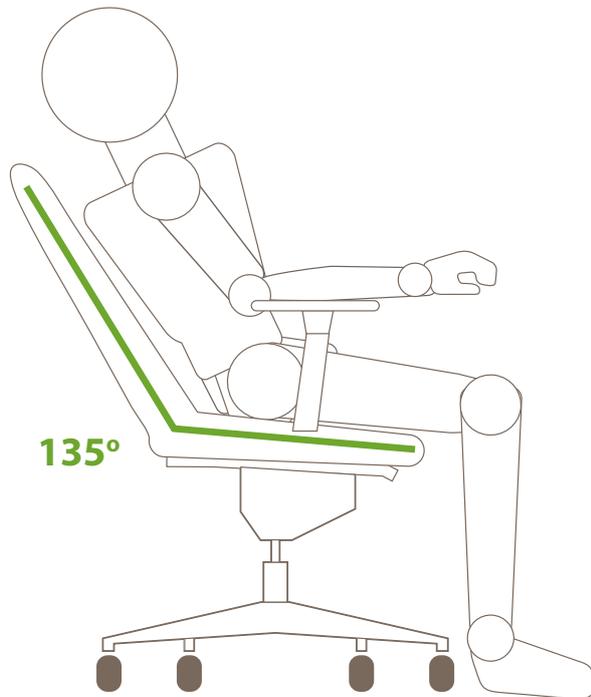
There are shaped supports for this area of the back, however the thoracic spine/ribs should be the opposite curve of your lumbar spine, so the area can be supported with a plain chair back.



If you are sitting with the correct pelvis and lumbar spine posture, your thoracic spine/rib cage will be over your centre of gravity and, therefore, your upper body will need less muscular support. However, over time, the muscles supporting the upper body will tire and some support from the seat back can help. Getting up and moving around will also help!

Don't worry too much if your chair back is not high enough to support your thoracic spine/rib cage - just putting your pelvis and lumbar spine in the correct positions has been shown to help position your thoracic spine correctly.

An adjustable back angle is common in chairs and has often been linked to seat pan position. Studies of people using computer monitors show a link between the amount of back angle adjustment and comfort in the spine.



The optimal amount of angle adjustment is said to be 70 degrees, which fits with the laid back posture and is known to reduce lumbar spinal pressures. In that example, the angle used was 135 degrees at the hips, or 45 degrees of chair back angle.

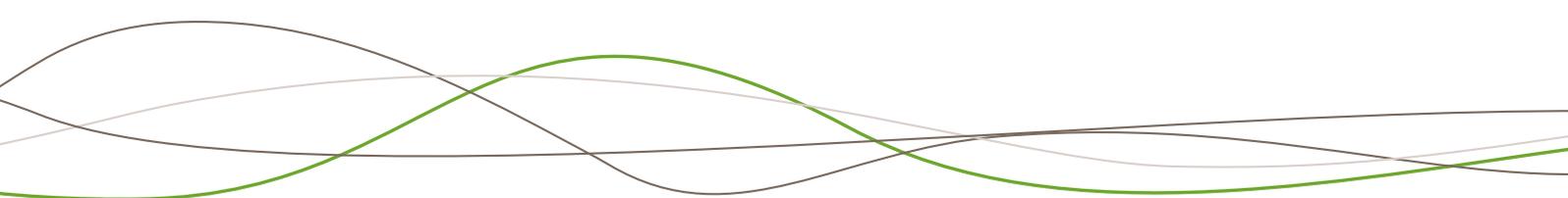
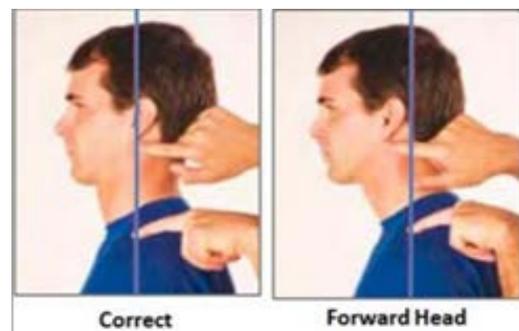
Remember, this reclined position may reduce lumbar spinal pressure and improve comfort but it is not recommended long term for the shoulders and neck. Being able to lean the chair back might feel nice but, as it reduces the strain on one part of the back, it leaves the other parts at risk.

If you are sitting correctly with your knees lower than your hips (thighs down), you should set your chair back to an angle of **90 degrees**.

Support of the neck/head on a chair is rare. Even where there are head supports (e.g. cars), people very rarely use them. We generally sit with our heads supported by our muscles and, in fact, supporting the neck is not usually recommended – the correct positioning of desk/monitor height is much more important.

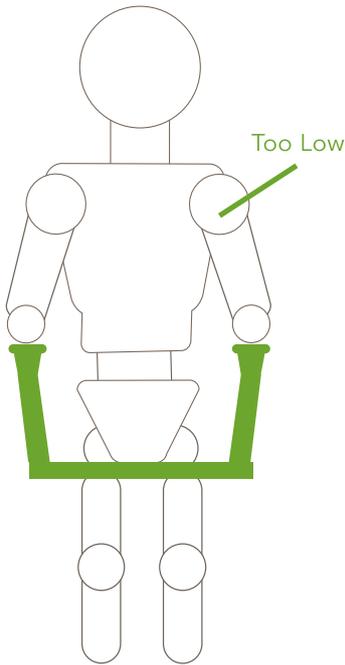


However, ergonomic chairs with head supports are available and those with both height and depth adjustments are best. When sitting upright, the neck should be in the neutral position with the earlobe positioned between the collar bone and the muscles of the neck:



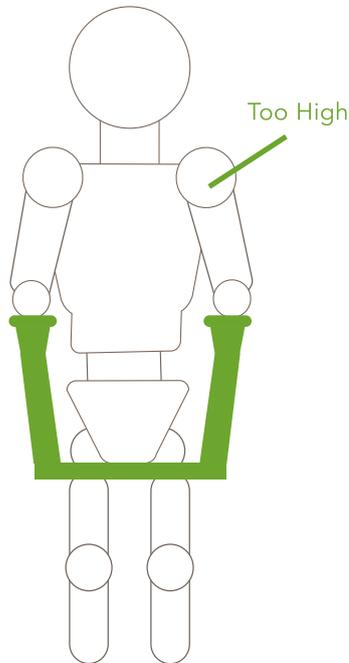
If you spend part of your time NOT sitting at a desk then armrests are important – but they need to be in the correct position.

Firstly, the armrests need to be the right width. If they are too far apart, you will sit with your arms out at an angle which is not ideal, as having the shoulders in a permanently abducted (out to the side) position can lead to shoulder and neck fatigue.



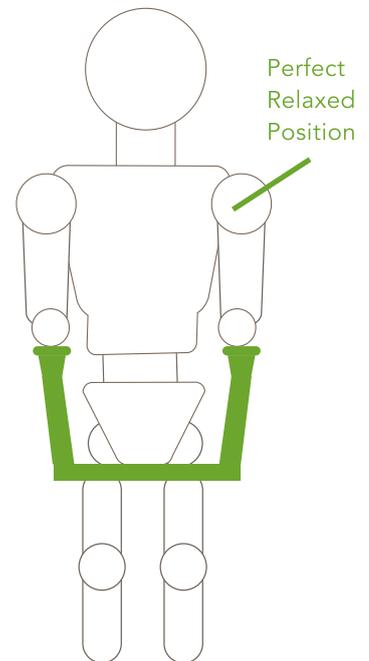
Next, the armrests should support your arms at the correct height when you are sitting correctly, meaning adjustable armrests are best.

If the armrests are too high, your shoulders will shrug and force the shoulders out of position. This can create stress in the shoulders where the base line muscle tension increases, as the muscles are constantly held in a short position.



The relaxed position is where the shoulders are level (neither up nor down) when resting on the armrests.

Armrests should be large enough to support most of your forearm and soft enough to allow the support of the soft tissues, but not so hard that the bones and nerves are jabbing into them.

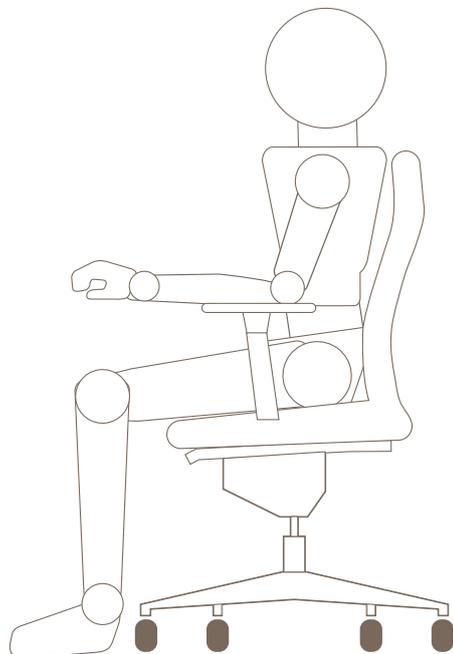


Ergonomic chairs, come in all sorts of shapes and sizes and range in price too. For most office workers a well-built budget office chair with adjustable height, tilt and lumbar support will suffice. However with the many chairs available there are plenty to choose from to suit all types of people and budgets.

The most important thing to remember when sitting is achieving good posture.



If you have followed all this advice about correct sitting posture and the use of various chairs and adjustments, this is how you should look when sitting down.



## CONTACT US

Physio Med Limited.  
Chartered House, Gelderd Road,  
Leeds. LS12 6DT

Tel: **0113 229 1300**  
Email: [customerservices@physiomed.co.uk](mailto:customerservices@physiomed.co.uk)  
Website: [www.physiomed.co.uk](http://www.physiomed.co.uk)

