

The Workstation Solution

Your essential guide
for less pain in the
office



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Introduction – The Dangers of Sitting

We evolved to move. And for thousands of years that's what we did – we walked, we ran, we climbed, we squatted. It has only been in the last few hundred years that we have moved away from this more active (and healthy) lifestyle.

Today, for the majority of us, sitting has become the norm – we sit to eat, we sit to drive, we sit at work and a lot of people still sit when they are at the gym!

The dangers of excessive sitting have been well documented. Sitting for more than 6 hours per day is associated with a host of disorders from **chronic diseases** such as heart disease, cancer and diabetes to **muscle, joint and bone problems** like back pain, neck pain and osteoporosis [1]. It is no wonder that sitting has been dubbed by many as the “new smoking”!



This guide will teach you how to create your optimal workspace to counter the dangers of excessive sitting - for *less pain, less stiffness and better health.*

The Solution

If sitting is bad, the obvious answer would be to stand. Unfortunately, as with most things in life, it is not quite that simple...

Standing all day in the same position also poses certain problems – particularly for those who have spent half a lifetime sitting in front of a screen and have consequently developed muscle imbalances and joint restriction.

The best answer is to **move** and to vary your working posture as much possible throughout the day and to transition to more active positions **gradually** to give your body the chance to adapt and strengthen. As Professor Stuart McGill States:

“

”

The best posture is one that is constantly changing.

As well as being more active you want to ensure that your desk set-up encourages **proper alignment** to reduce the stress on your muscles, joints and ligaments.

Sit-stand desks

Sit-stand desks are a fantastic tool to help to keep you moving and varying your posture throughout the day. They adjust from a standard desk height, for seated work, to elevated positions that allow you to work in a range of standing postures.



Sit-stand desks come in two types – manual and electronic. Electronic models are more expensive but are well worth the extra investment. If you are regularly transitioning back and forth from sitting to standing throughout the day (something that is highly recommended, particularly when you are not accustomed to standing to work) you will tire of spending 2-3 minutes cranking your desk up or down every time you want to change position.

Small [electronic sit-stand desks](#) start at around £550.

Desk-raises

A cheaper alternative to replacing your current desk with a sit-stand version is to introduce an adjustable desk-raiser. The desk-raiser sits on your original desk and elevates to allow you to switch between sitting and standing postures.

Opt for a model that:

- ✓ Elevates to a suitable height for standing (i.e. the distance from the floor to your elbow when standing upright).
- ✓ Can be fixed at different heights, allowing you to work in multiple positions.
- ✓ Is easy to move between positions.
- ✓ Will accommodate the size and weight of your monitor(s).
- ✓ Is sturdy in all positions, and stable when typing.

“[Varidesk](#)” is a well-established desk-raise brand, which offers two-tier designs and models that are large enough to accommodate dual-monitor set-ups. You can also find a range of cheaper alternatives on [amazon](#).



10 Tips for Transitioning to a Sit-Stand Desk

1

Correct your posture

A relaxed upright posture should be natural and automatic. However, a number of factors (e.g. injury, prolonged sitting, repetitive motions, stress, poor development, poor training, and sedentary lifestyle) can all corrupt this normal, natural posture. Use the following guidelines when standing to help achieve a relaxed upright posture:

Breathing

Breathe into your stomach and lower ribs. It is not normal to lift your upper chest and shoulders to breathe and breathing this way is a common cause of neck and shoulder tightness. Avoid drawing in your stomach as this prevents a normal / natural breathing pattern.

Stand Upright

Think about someone gently pulling your tailbone down whilst also pulling you tall from the crown of your head, without lifting your ribcage. This will help automatically align the spine and engage the right postural muscles without over-contracting.



Stand Relaxed

Do not hike your shoulders or pinch your shoulder blades together at the back. Let your shoulders drop towards the floor and spread outwards. Don't suck in your stomach.

Stand Centred

Your weight should be spread evenly between the front and the back of your feet. It should also be spread evenly between the outer and inner edges of your feet.

2 Transition gradually

It takes time for the body to adapt to the stress of standing. Years of sitting means that most people are grossly de-conditioned and too weak / inflexible to work from a standing-desk. So make sure to **go slow** and give your body a chance to adapt.

Start with one session of standing per day of around 10-20 minutes. Slowly add more periods of standing through the day and then later increase the time spent standing in each period. Listen to your body and if you ache or develop pain take a break. Or, even better, take a break before you ache! A good rule of thumb is to switch postures every 20 minutes and go for a short walk or take a [micro-break](#) every hour.

3 Vary your standing position

Standing in different postures will help to engage different muscles and reduce the strain on your soft tissues and joints. Change between the following positions:

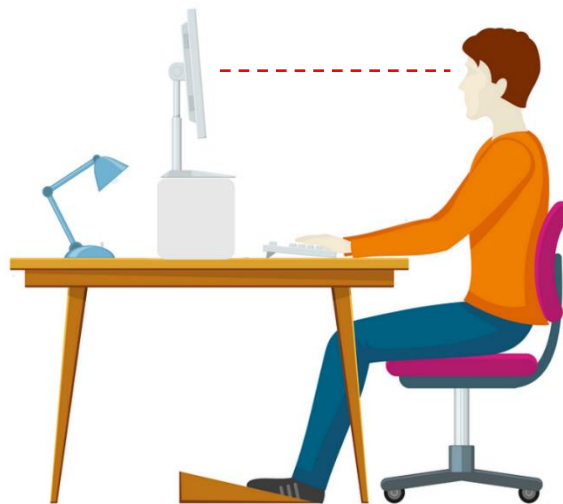
- i. **Normal stance** – with feet set shoulder width apart.
- ii. **Straddle stance** - widen the width of your feet until you feel a gentle stretch in your inner thighs
- iii. **Lunge stance** – place one foot in the front of the other. You should feel a gentle stretch at the front of your back leg
- iv. **Single leg stance** – raise one foot onto a small stool or chair. Make sure to switch sides regularly.
- v. **Calf stretch** – Start in normal stance. Place the forefoot of one leg on a small block (2-3 inches high) keeping the heel on the floor. You should feel a gentle stretch in the calf.

4

Screen height

The two most important things to consider when setting up your monitor are:

- a. The centre of the monitor should be at eye level
- b. The monitor should be directly in front of you so you don't need to turn to look at it.



Monitor stands

Whether you're sitting at a desk or using a sit-stand workstation, a [monitor stand](#) is usually needed to raise your screen to eye level. If you opt for a non-adjustable model use the following steps to find your ideal monitor stand height:

- i. With your arms relaxed by your side, measure the vertical distance from your elbow crease to your eyes (measurement 1).
- ii. Measure the distance of the centre of your monitor to its base (measurement 2).
- iii. Subtract measurement 2 from measurement 1.

This will ensure your keyboard sits comfortably at elbow height and your monitor is at eye level – reducing the stress on your neck, shoulders and arms.

5 Sit-stand stools

Sit-stand stools are another way to vary your working position throughout the day. They are particularly good if you are new to standing for longer periods as they help to take some of the weight off whilst still maintaining a more active and upright posture than standard sitting.



Photo: aeris

6 Anti-fatigue mats

Anti-fatigue mats are designed to reduce stress on the feet and legs when standing. They have been shown to provide a statistically significant improvement in postural comfort of the lower back and the upper and lower legs compared with not using a mat [2].

A range of different anti-fatigue mats can be found on [amazon](#). We particularly like the [anti-fatigue mat from Veridesk](#). The raised sides of this mat increase the variety of possible postures, which helps to engage different muscles while standing. The raised front panel is also great for stretching the calves which have a tendency to tighten up with standing.

7 Shoe Selection

What we wear on our feet has a big impact on how our feet function and, therefore, also our on standing posture. Standing barefoot is a great way for our feet to work as they were designed to, however, working barefoot may not be for everybody. Foot weakness, general deconditioning or the work setting may preclude working barefoot. If so, the following checklist will help you pick the perfect footwear.

Avoid a raise

Like normally-shaped feet, shoes should be level. Unfortunately most are not. All too often they are either elevated at the heel (heel lift), elevated at the toes (toe spring), or both. A raised heel places more load on the forefoot, whilst a toe spring places more strain on the muscles that flex the toes (a common issue in plantar fasciitis). Pick a shoe with no / minimal heel lift and no toe spring. (If the toe spring is very flexible and automatically corrects when weight-bearing it is not so much of a problem).



Avoid a narrow toe box

The natural shape of the foot is widest at the toes. Unfortunately, shoes very often taper at the toe causing compression. This compression of the toes inhibits (shuts off) important stabilisers of the feet and can also lead to deformity. To check the shoe is wide enough pull out the insole and overlay your foot on top of it. The insole should be spacious enough that the foot, and especially the toes, do not splay over the edges at any point.



Avoid Thick / Stiff Soles

Just like the hands, the feet are sensory organs that provide the body with information from the environment. Thick soles block this information and can affect the proper functioning of the foot. Pick a shoe with a thinner, flexible sole. To test: fold and twist the shoe – the shoe should deform with minimal effort.

Finding a shoe with all of these qualities can be difficult, however more shoe companies are starting to recognise the importance of shoes that allow the foot to function naturally. “Vivobarefoot” is one such company we use and recommend. You can now find [vivobarefoot trainers and shoes on amazon](#).



8 Orthotics

For some people with very flat arches or very weak feet an orthotic can be useful to help support the foot when standing. However, try an [over-the-counter orthotic](#) first, before forking-out for an expensive custom-built option. There is no evidence that customised orthotics are superior to pre-made ones for injury prevention [1].

As the feet get stronger from standing more, from exercising, and from wearing better footwear, most people will be able to gradually transition away from wearing orthotics at all.

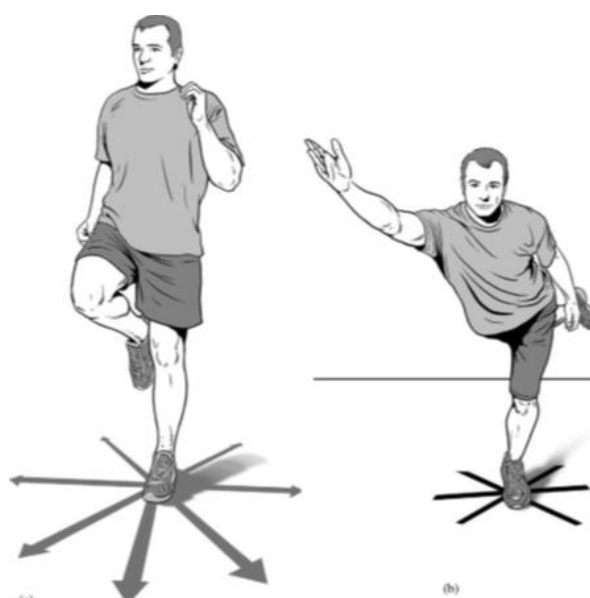
9 Build your standing strength

You can speed up your adaption to standing and decrease the risk of injury, by addressing any underlying strength and mobility deficits. When it comes to standing, the three most common strength deficits are the feet, hips and trunk.

The Functional reach

The “functional reach” exercise is a great way to build strength and balance in your feet and hips. To perform:

- Reach to different angles with one hand whilst your same-side leg reaches in the opposite direction behind you to counterbalance.
- You should feel you buttocks and feet working hard.
- Make the exercise harder by reaching further or reaching at more of an angle.
- Common errors:
 - Un-levelling of the hips or shoulders.
 - Loss of balance.
 - Forward movement of the knee beyond the toes.
 - Inward movement of the knee.



Trunk stability and endurance can be effectively and safely developed with the “side bridge” exercise.

Side Bridge

- Start the exercise lying on one side on your knees, feet and forearms, with your hips and knees slightly bent (image 1)
- Your feet, hips and shoulders should all be in line.
- Lift your lower hip up slightly and pull your lower shoulder down away from your ear so that your spine begins to straighten—this is the “ready” position (image 2)
- Move into the “plank” position by raising your hips up and forward (image 3).
- Hold the position for 2 breaths before relaxing back into the ready position.
- Try and breathe into your stomach and the sides of your ribs rather than into your shoulders.
- You should feel the muscles on the bottom side of the trunk working hard.
- The goal is 3 sets of 12 repetitions on both sides. But start slowly and only perform as many as you can with perfect form.



10 Build your standing mobility

In addition to appropriate muscle balance and strength we also need sufficient mobility to ensure good movement and posture. Many people are so “tight” that they cannot stand completely upright with good alignment. Without the mobility to achieve an upright posture the joints are forced to sit in a compensated position and the muscles have to work harder than necessary. This makes standing more tiring than it should be and can increase the risk of injury.

A good test of general postural mobility is the [Wall Angel test](#). If you score less than a ‘2’, introduce some mobility exercises into to your daily routine. Take a look at the following exercises aimed at restoring upright posture:

- [Three simple postural exercises](#)
- [The foam roll exercise for tension headache](#)



Back-Friendly Chair Set-Up

In this section we will go through the selection of a more back-friendly chair and how best to modify it for a healthier spine.

Chair selection

A good office chair should:

1. Support an upright (well aligned) posture and
2. Be adjustable

Supporting an upright posture

An upright posture is important to minimise load on the muscles and joints during sitting. You therefore want a chair that supports an upright posture and doesn't encourage you to slump. So, when looking for a chair opt for one:

- **Of a suitable size for your body dimensions.** The length of the seat pan is particularly important. If you are of a smaller stature, the seat pan will often be longer than your thighs. For your knees to bend comfortably over the front of the seat this means that your hips have to move forward away from the back of the chair, which reduces the support for the lower back.
- **With a suitable lumbar support.** A lumbar support is important as it helps to maintain the natural curve of the lumbar spine which reduces the load on the spinal discs and lessens the stress on the muscles and joints. Read more about lumbar supports below...

Be adjustable

Although sitting upright is better than sitting slumped, there is no single “perfect” sitting posture. Sitting rigidly with “good” posture will still lead to problems over time so it is therefore important to stay as mobile as possible. With this in mind, as well as taking regular breaks, ensure you also regularly adjust the position of your chair to help vary the load on the spine.

If buying a new chair, look for a chair with the following elements:

Reclinable seat back - able to recline 95 to 105 degrees.

Adjustable arm rests - to properly support elbows.

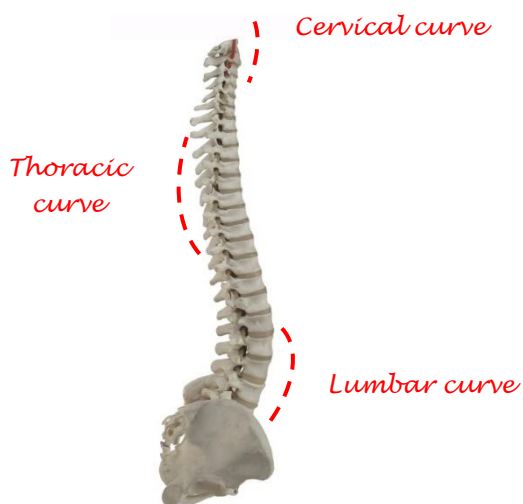


Height adjustable seat - so that feet can reach the floor with knees no higher than hips

Tiltable seat pan

Lumbar rolls

The human spine naturally forms an S-shape, with the spine curving forwards at the lower back, outwards at the middle back and forwards again at the neck.



When we sit most of us have a tendency to slump, which reverses the natural curve of the lower back.

In this slumped position the muscles at the bottom of the back are stretched and more pressure is placed on the discs which is one reason why sitting is a common factor in many low back complaints. Slumped sitting also changes the

posture of the neck and shoulders and can cause or exacerbate neck and shoulder pains.

A lumbar roll can assist in preserving the normal alignment of the lower back and help to alleviate neck and back pain. While many chairs have a built-in lumbar support, it is often inadequate to properly support the lower back because most chairs are designed for people of an “average” build.

If your chair does not have any lumbar support, or the lumbar support is not substantial enough for your body type, a lumbar roll is an inexpensive but effective addition. Lumbar rolls are also very useful in cars as they often have a bucketed seat shape which puts your spine into a slumped position.

[McKenzie lumbar rolls](#) are very good quality and are supplied in a variety of sizes to suit most people’s needs. They also come with an adjustable elastic strap which makes fitting and moving the rolls very easy.

Other sitting options

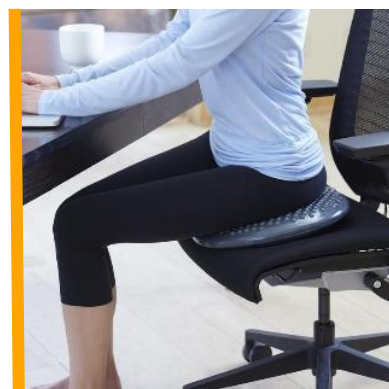
Gym balls

Gym balls are a good (albeit bulky) addition to your workspace to help vary your seated posture throughout the day. Their inherent instability means that you have to be more active in order to remain upright compared to sitting on a standard desk chair. This is generally a good option but for individuals with muscle imbalance (muscle tightness and/or weakness) of the lower back the increased muscular activity can provoke back pain. We recommend the [66fit Exercise Ball](#).



Balance discs

Balance discs can be placed on the seat pan of a standard chair or stool and, similarly to the gym ball, they create a degree of instability that encourages more movement. The advantage of a balance disc is that the inbuilt support of the chair (lumbar roll, arm rests) can still be used and this may therefore be a better option for those with a history of back pain. We recommend the [balance disc from 66fit](#).



Ergonomic tips for neck, shoulder and arm pain

#1 Use a separate keyboard for laptop work

If you are working from a laptop it is only a matter of time before your neck or shoulders start to complain. With laptop work, a [separate keyboard](#) is essential to avoid straining your neck, your shoulders or both.

Place your laptop on a monitor stand so the screen is at eye level and use your separate keyboard at elbow height, or slightly below. This will minimise the stress on your neck, shoulders and arms. If you don't want to contend with more cables, [wireless keyboards](#) are also available.

#2 Mouse placement

Place your mouse towards the edge of your desk to avoid overstretching.

For wrist, elbow and shoulder problems, a vertical ergonomic mouse is a good option as it places the upper arm and hand in a more neutral position, reducing the strain on the muscles and joints. We recommend the [Anker Vertical Ergonomic Mouse from Amazon](#).

#3 Opt for a headset

If you have to use a phone regularly throughout the day consider using a separate headset. Holding the phone to your ear for long periods places a strain on your neck and shoulders which, over time, can lead to pain. A headset allows your arms and shoulders to stay relaxed as you are talking on the phone.

If you liked this eBook please consider sharing it with your friends or colleagues!

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1. <https://getbritainstanding.org/health-risks.php>
2. Michaud, TC. (2013). Injury-Free Running: How to Build Strength, Improve Form, and Treat/Prevent Injuries. *Newton Biomechanics*.
3. Havenith, G., & Dorman, L. E. (2007). The effect of COBA anti fatigue floor matting on worker comfort during standing work.

Images

Selected images reproduced from Liebenson. C., *Journal of Bodywork and Movement Therapies*.