

# **Back Injury Prevention**

## **Introduction**

Do you want to prevent injuring your back? You may have injured your back in the past and want to prevent hurting it again? Many people have or will hurt their back from lifting incorrectly, poor movement mechanics, lack of core strength, dysfunctional gut health, poor seating, limited flexibility, lack of movement and having poor muscle balance. In fact 80% of people will at some time in their life have a back injury that gives them symptoms for 3 months or longer. If you want to minimize the likelihood of being one of the 80% apply the following and reduce your likelihood of back injury.

## **Learn how to lift correctly**

When lifting loads of 5 kg or more adhere to the following:

- You should maintain a neutral lumbar spine. That is, your lower back should maintain its natural curve throughout the lift and the legs and butt should lift the load, not the lower back.
- To determine if you have the right amount of lumbar curve use the following test. Stand with your body up against a flat wall. Place your hand between your back and the wall. If your hand fits snugly in this space your lumbar curve is about right. If your hand doesn't fit in this space you have a lack of lumbar curve and if the space is larger than the width of your hand you have too much lumbar curve. In most cases appropriate exercise can help you achieve and maintain a neutral lumbar curve. Consult a qualified personal trainer or physiotherapist to learn how you can reestablish an appropriate lumbar curve and minimize back injury.
- Take a diaphragmatic breath and pull your belly button in prior to each lift. This engages your inner unit which stabilizes and protects your spine. The inner unit consists of your transversus abdominus, pelvic floor, diaphragm and multifidus muscles of the lower back. These muscles work together by pulling in towards the spine and creating maximum stability to prevent any unwanted movements that may injure it.
- Bend from the hips. The initial movement in any squat should always be from pushing your butt out behind you (as in a waiter serving you in a restaurant). You should then lower into a squat position keeping your heels on the ground, your chest high and maintaining your lumbar curve. From the bottom you should push through your heels using your butt and legs to help lift you, exhaling slowly through pursed lips about half way through the lift.

When lifting objects that are on the ground use a Lunge squat

Using a traditional squat would not be ideal here as it would be difficult to maintain a neutral lumbar curve. For the lunge squat, place one leg forward of the body and close to the object and the other behind the body, as in a lunge position. Inhale, pull your belly button in and push through your front heel and back forefoot to lift from the bottom position. Again, you should maintain a lumbar curve here also.

### **Always avoid the following movements**

- Forward bending and flexing the spine under loads of more than 5 kg.
- Forward bending and rotating under load (This is often how spine disc material is damaged or disc prolapses occur)
- Lifting heavy load on one side of the body. This can lead to lateral curvatures of the spine and can lead to injury. Try to alternate your lifting on either side of the body.

### **Perform quality movement only (*Perfect practice makes perfect*)**

To ensure you move most effectively practice quality movements only. Poor quality movement only leads to more poor quality movement. Our nervous system can only reproduce movements that we consistently perform. High quality movement performed consistently helps us develop superior motor engrams into our nervous system. Motor engrams are specific movement patterns that we perform largely unconsciously or automatically. An example would be pulling your belly button in before lifting heavy loads and performing a squat without having to think about the movement consciously.

### **When to bend your spine**

It is important to still bend your spine to maintain the integrity of the spinal ligaments. We are designed to bend the spine, but only under light loads (ie less than 5kg approximately). From the forward bend position the belly button should still be pulled in and the hips (butt) should be used initiate the lift.

### **Build a stronger core**

A strong core provides the following 2 major benefits to reduce the likelihood of injury.

A strong core provides protection for the spine when lifting. This protection is provided by 4 core muscles as described above in “Learn How to lift correctly” above.

A strong core contributes to more optimal movement because all movement starts from the core. Therefore, a stronger core means more stable, efficient and effective movement. If the core is working effectively, it engages milliseconds before movement of the rest of the trunk and extremities. The better the quality of movement the less likely injury is going to occur.

### **Have optimal gut health**

Digestive problems from eating a poor diet can prevent the abdominals from working correctly. Pain and inflammation from the gut prevent the abdominals from functioning correctly by interrupting the neural pathways to the abdominals. Obviously without proper functioning abdominals you have less support for your spine and your movement is going to be inferior. Eating too many processed foods high in sugar, additives, preservatives and saturated fat will contribute to poor gut health.

### **Look at your seating**

Many seats are poorly designed and many people sit poorly unable to maintain their neutral lumbar curve for long periods at a time. This generally leads to a lack of lumbar curvature or a backward rotation of the pelvis. This done on a long term basis will contribute to back pain. To help maintain your lumbar curve while seated use a lumbar roll.

For your office chair the following should be implemented. Your chair should have a high back with good lumbar support. (Add lumbar support if there isn't enough). A foot rest should be used to keep your thigh and lower leg at right angles which will help keep your upper body more upright and aligned. Your chair should be close to your desk with your thighs just under the desk. Your keyboard and mouse should be very close to you (with your arm rested on the desk and your arm at right angles at the elbow). This will help prevent upper back, neck and shoulder overuse issues. The top of the computer screen should be at eye level.

### **Improve and maintain your flexibility**

All muscles in your body have an optimal amount of movement from which they operate best. Less flexibility in one muscle or area of the body leads to compensations in other areas of the body.

Some examples are:

Short hamstrings have a direct influence on posterior rotation of the pelvis, reducing lumbar curve and contributing to low back pain and injury.

Short hip flexors pull the pelvis too far forward causing too much curvature through the lumbar spine. In addition tight hip flexors contribute to poor lower abdominal stability which also increase the chances of back pain and injury.

### **Keep moving**

Continuing to exercise will keep you flexible, nourish your joints and provide strength to your muscles and associated joint capsules. The key however is to perform the right type of exercise for your needs. Exercise also needs to be gradually progressed to further improve your function over time.

Lack of appropriate exercise will contribute to poor posture, flexibility and stability and increase your chances of back injury.

### **Have your muscle balance assessed**

Have a muscle balance assessment from a qualified Personal Trainer or Health Professional to determine if you are at risk of back injury. They will be able to assist you by providing appropriate exercises to help you achieve better muscle balance and reduce your likelihood of back injury.

## **Conclusion**

To reduce your likelihood of back injury and be part of the 20% who are back injury free, you need to do the following. Learn how to lift correctly, avoid lifting loads in flexion and flexion/rotation, only perform quality movements, bend you spine for lighter loads, build a stronger core, have optimal gut health, look at your seating, improve and maintain your flexibility, keep moving and have your muscle balanced assessed by a qualified Personal Trainer or Physiotherapist.