

**Let's talk NEUTRAL SPINE!**

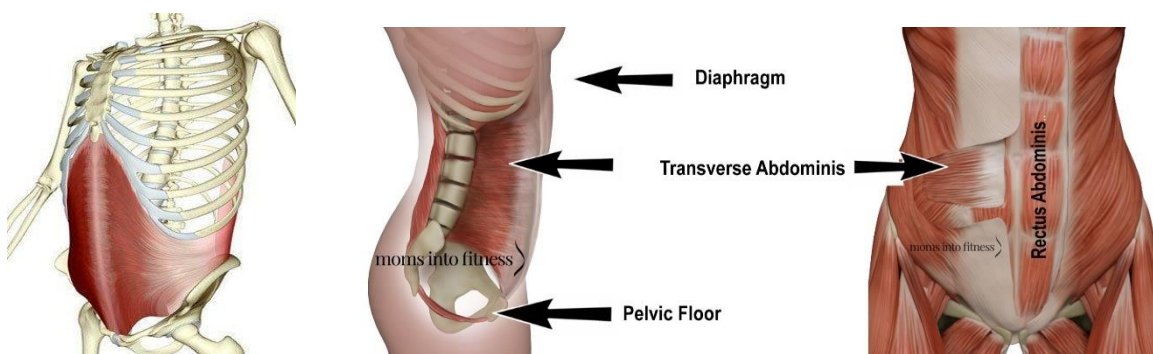
Anatomically speaking, neutral spine is when your hip bone and your pubic bone are in alignment. This is the strongest position structurally for your spine to be in and it's the position it was designed to be in. All the muscle attachments, ligaments, tendons, cartilage and discs perform optimally in this position. The natural curves of the spine develop during early childhood and enable the spine to absorb some of the shock that would otherwise be transmitted up to our head when we move. The postural muscles of the body are, as we stand, working constantly to keep us upright. There exists a delicate balance between those at the front and the back of the body, any habitual change in the way we stand or sit will affect that delicate balance. Sitting slumped over your desk all day alters the angles of the curves of your spine and stresses the ligaments, muscles and discs. Eventually pain may set in.

In Pilates a lot of our exercises aim to strengthen our core muscles while we are in this optimal position. In between your vertebra are discs (a soft gooey centre and a tough exterior – THINK jelly babies!) The discs allow and compensate for movement in your spine. For example, in our side bend/side oblique stretch to the right, the spaces between your vertebra close on your right side and the impact absorbing disc centre is pushed towards your left. This is what your discs were designed to do! The posterior (back) surface of the disc is the weakest part, which means that when you bend forward (in flexion) the centre of the disc pushes towards this weakest part – which is why if you have any lower back injury or pain, you need to be very careful in this position. It is also very important that neutral spine is maintained to prevent further injury. Neutral spine cannot be accomplished just in class, so correcting your posture regularly standing, lying (front, back, side) it is really important to make a neutral spine part of your daily life

**Let's talk Transverse Abdominis**

This magical muscle holds the key to core stability, strength, injury prevention, balance, back care and so much more, so how can we make the most out of it? The first thing you need to do is understand where it is and what it does.

**Here is your TVA!**



What does it do? – your TVA can be compared to your eyelids – they have a mind of their own. They blink when they perceive danger or when your eyes need them to. You can

also control them and blink whenever you want. Your TVA is the same, it will activate quickly in an 'emergency' (such as a cough or a sneeze) to stabilise and protect your spine and you can learn to stabilise it whenever you want. This takes body awareness, practise, honesty and patience, but bear with it. It will be the single most important muscle you learn to engage. Your spine isn't strong, if removed from your body it would buckle under just 5lb pressure. What keeps it strong is the network of muscles surrounding it. Most of these cannot be independently activated, but you have the opportunity to really make a difference to the overall strength and stability of your spine by learning how to engage your TVA, engaging to 30% will provide enough stability to keep your spine safe. Your TVA is part of your core system of muscles (including TVA, pelvic floor, glute muscles, adductor muscles, lower back muscles, hip flexors). When you draw your TVA inwards, the pelvic floor should also lift.

The ideal TVA contraction = exhale, draw belly button gently back to the spine, draw pelvic floor gently up. Pelvis doesn't move. No tucking, hunching, thrusting or breath holding.

### **Finding your TVA:**

- Standing - Physically press your fingers in below your ribcage and cough, can you feel the muscle moving under your fingers as you cough?
- Supine (on your back – in rest position) - Place your fingers either side of your belly button and press in. Without activating your TVA, lift your head an inch away from the floor – can you feel your tummy pop and push against your fingers? This is called **DOMING** and is what we are trying to avoid. Once you have activated your TVA your tummy will not be able to push up against your hands.
- Prone (on your front) – Imagine you have a Malteser/pin/ice cube under your tummy (draw your belly button through to your spine).

### **Imagine:**

- Imagine you have your tightest jeans on and have just eaten a big meal
- Imagine a spring gently pulling your belly button towards your spine
- Imagine you are wearing a belt and tighten it up a notch

### **Let's talk BREATHING**

Breathing is an automatic process that is often ignored in our day to day lives. Despite the fact that breathing is vital for life, most of us are not consciously aware of it and very few of us breathe fully or effectively. Apart from oxygenating our blood and expelling carbon dioxide from our bodies, breathing plays a very important part in movement. It also encourages concentration, allowing us to achieve inner focus and unite the body and mind. It helps us to provide a rhythm for movement, and, most importantly, it can affect the quality of our posture and movement, which in turn helps to improve our overall health and well-being.

According to Joseph Pilates, 'breathing is the first act of life and the last.....above all, learn to breathe correctly'.

It may help to think of breathing as a movement process in its own right. It is not simply a static or an internal activity, but one that uses many muscles, the same muscles in fact that are responsible for the maintenance of good posture and alignment in the body. Breathing influences our actions and can help to facilitate ease of movement as well as restrict movement and create tension. Therefore, careless or uncontrolled breathing can be very detrimental to our overall exercise goals.

### **Inhalation:**

As you breathe in, focus on the back and sides of the ribcage where your lungs are situated. Like balloons swelling gradually with air, your lungs will expand and widen the walls of your ribcage. As you breathe in and fill the lungs, the diaphragm also lowers into your abdominal area.

### **Exhalation:**

To exhale, means to expel all the air that has been used. The deeper your exhalation, the greater your capacity to inhale new fresh air. As you breathe out, feel the air gently being pushed out from the bottom of your lungs and

exiting the mouth. Your diaphragm will begin to rise and it will be easier to connect and hollow your deep abdominal muscles as you empty the lungs and feel the ribcage beginning to close.

**Let's talk JOINT HEALTH**

Many Pilates exercises promote healthy joint function in and around the major joints of the body. Although problems can occur separately in either the lower limb, upper limb, and the spine, many issues may lie beyond the area where symptoms may present. For this reason, never discount the benefits of an exercise just because it is not working directly around the area you are concerned with, for example improvement in the movement quality of the feet and ankles can have a profound effect on the function and health of the hip joints, which can have a positive influence on the joints of the spine, including the neck and head, which in turn affects the shoulders, elbows and wrists. Therefore, improvements made in one area of the body will affect the rest of the body, sometimes quite subtly and other times quite dramatically.



There are many types of physiological disorders that affect the health and function of the joints, conditions such as osteoarthritis are associated with wear and tear of the joint structure. Good joint alignment is a key Pilates principle and helps to reduce wear and tear on the joints. Keeping joints mobile and strengthening the muscles that support and move them, will also keep them healthy. Because Pilates exercises are performed with awareness and control, they are very safe for people suffering from such conditions.

Weight management is also a very vital part of promoting joint health; carrying too much weight puts excess strain on your joints, especially the knees and hips. When trying to improve joint function with Pilates exercises it is very important to avoid any movements you have been advised not to do by your doctor or

therapist.

Each joint has a variety of potential movements. Problems often occur in or around a joint because our everyday activities can cause us to use only a limited part of its potential movement and often these movements are repetitive. Often the positions we place these joints in for long periods of time are not 'biomechanically natural' and they therefore become detrimental to the maintenance of good movement and health of the joint.

**Therefore, as the saying goes, with regard to movement – use it or lose it!**

**Let's talk JOINT HEALTH – Joints of the lower limb (hips, feet).**

The hip joint joins the thigh bone (femur) to the pelvis. Its socket design is robust enough to support the weight of the legs while still allowing movement in multiple directions.



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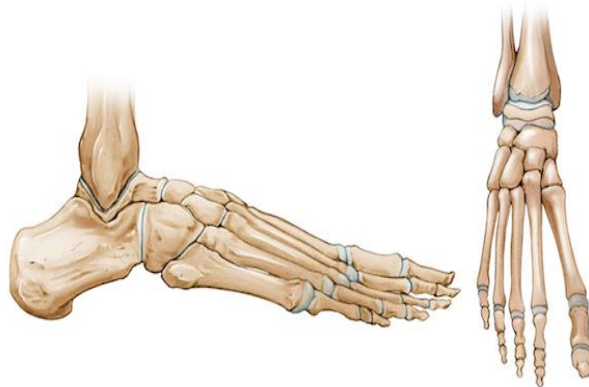
problems involved in the hips joint include: hereditary causes of ball and socket development and alignment, trauma to the thigh or hip socket, surgical repair or replacement, degenerative problems caused by wear and tear. More commonly seen however are problems arising from the muscles and tendons crossing the joint, most of which are a result of poor use and faulty alignment.



The knee joint joins the thigh bone (femur) to the bones of the lower leg (tibia and fibula). It is the largest joint in the body with a hinge design that limits its movement potential almost entirely to bending and straightening (flexion and extension). It is a very robust joint as it has to support the entire weight of the body and thigh while still allowing a large range of movement. The most common problems that occur with the joint structure usually result from wear, tear or injury. As the knee lies between the ankle and hip joints, imbalances and dysfunctional use of the muscles and tendons crossing any one of these joints will heighten the risk of injury or damage to the knee. This highlights the importance of improving and maintaining movement

quality across the ankles and hips as well as the knees.

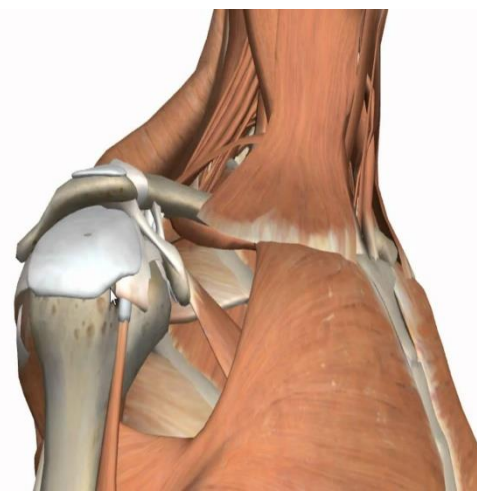
The foot and ankle joints are formed by many which give rise to an array of different of them are relatively small and subtle. The powerful movement is pointing and flexing ankle. Keeping this joint functioning well is feet are the only point of contact with the a vital role in balancing and supporting the Most of the problems arising in this area alignment and under use of the structures. activities involve sitting and when we do feet they are often crammed into shoes, full movement and therefore the function of the feet. Movements that challenge the intricate movements of the foot can have a positive effect on the function of the ankles, knees, hips and spine.



individual joints movements, most largest and most the foot from the important as the ground, performing rest of the body. result from poor Many of our daily actually use our which limits their

### Let's talk JOINT HEALTH – Joints of the upper limb (shoulder, elbow and wrists)

The shoulder comprises a group of structures that join the upper arm (humerus) to the torso. The main joint of the shoulder joins the upper arm to the shoulder blade (scapula) and allows movements in multiple directions in much the same way as the hip joint does. The shoulder blade should move freely on the back of the rib cage in response to the upper arm and spine. It is joined to the collarbone (clavicle), the other end of which is joined to the breastbone (sternum). The collarbone is able to move up and down above the front of the upper ribcage. The



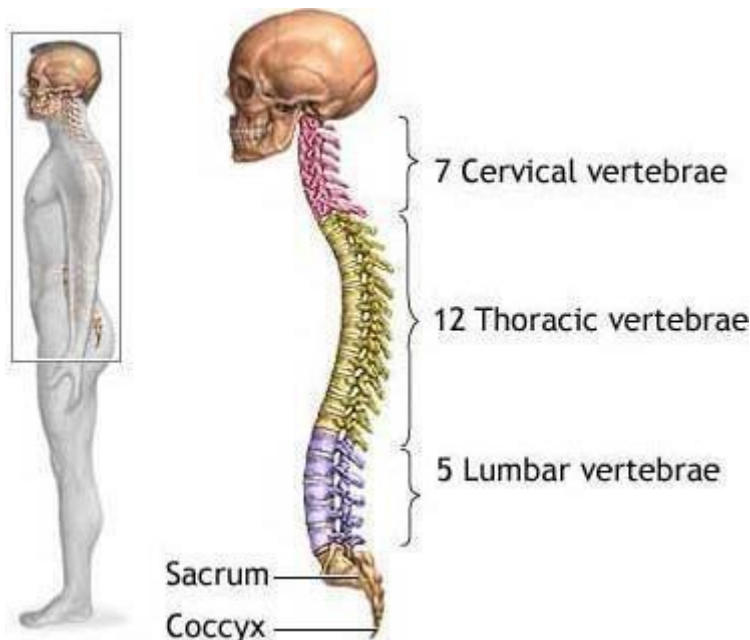
joints between all of these structures should be mobile enough to allow the wide range of motion required in the arms and hands while also remaining strong and stable to allow for lifting, pushing and pulling actions. The degree of mobility within the shoulder and its dependence on good spinal alignment means that the area is vulnerable to the effects of poor posture, which heighten the risk of wear and tear as well as the risk of injury.

The elbow joint comprises three bones (humerus) and the radius and the ulna (forearm). The wrist joint connects the bones of the forearm to a double row of small bones in the hand (carpals). The joints are similar to the knee and ankle joints as they 'hinge'. Unlike the knee and ankle, there is a high degree of rotation available in the forearm. The problems that can occur are often the result of poor movement mechanics and the exposed nature of the joint also leaves them susceptible to injury and strain.



**Let's talk JOINT HEALTH – Joints of the spine**

The spine consists of twenty-six separate bones and is divided into five regions: cervical, thoracic, lumbar, the sacrum and the coccyx. Each region displays a variety of different characteristics and movement potential. These bones are connected by a number of ligaments and intervertebral discs. Together they form the vertebral column, also known as the spinal column, which is the central structure upon which the rest of the body is built. It also functions as protection for the spinal cord and provides attachment points for the ribs and the muscles of the back.



**Cervical vertebrae**

The cervical region consists of seven bones, known as the neck. These bones allow the neck to bend forwards and backwards and from side to side as well as turning left and right.

**Thoracic vertebrae**

the thoracic region consists of twelve vertebrae which start out smaller – like the cervical vertebrae and increase in size until they are similar to the lumbar vertebrae. These twelve bones articulate with one another and with the ribs, forming the torso. The movement available is turning left and right, and bending from side to side. The torso can also bend forwards and backwards (although there is less movement in the thoracic region than in the

neck and lumbar spine).

**Lumbar vertebrae**

The lumbar region of the back usually consists of five vertebrae sometimes six or four), which are much larger than the vertebrae above them. This is because this region is subjected to greater loads from the body above and the legs

and pelvis below. The movement available is bending forwards and backwards and a moderate amount of bending from side to side. There is no rotation in this area.

### **Coccyx (tailbone)**

The coccyx usually consists of four fused vertebrae but this can vary between three and five. It is a triangular shaped bone that offers support for the pelvic region.

The pivotal role that the spine performs means that problems in this area can be detrimental to normal function and movement. Back pain is one of the most common complaints in western society and is the largest cause of work-related absence. It can affect anyone, regardless of age, but is more common in the age group 35 – 55.

Lower back pain can affect 7 out of 10 people during their lives. It can come on gradually over a period of time or quite suddenly. Even a small amount of damage or inflammation can cause a large amount of pain or discomfort. In most cases, staying active and continuing carefully with daily exercises will promote healing. Please however, seek medical advice where necessary.

