Bhujangasana and Resilience

Notes for SWYA OGT workshop 12/5/18 by Andrea Newman

Resilience

Resilience is the ability to adapt, within a range.

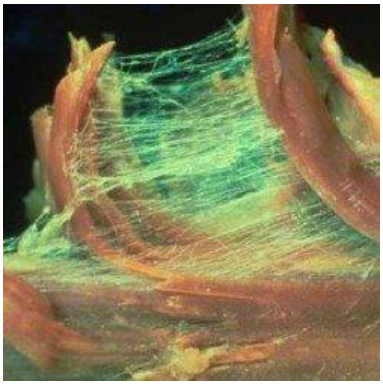
A dictionary definition:

"The capacity to recover quickly from difficulties; toughness." Or

"The ability of a substance or object to spring back into shape; elasticity." Oxforddictionaries.com

It is useful in life to remain adaptable, both physically and mentally, so that we can deal more effectively with life's challenges.

Fascia (aka connective tissue)



The fascial system of the body is plastic. It moulds into the shape of whichever body positions and movements we hold for lengths of time and/or repeat frequently.

For example, if you spend a lot of time sitting in front of a computer with the back rounded, the intelligent body will pick this up as a needed activity and will try to support it. The fascia will thicken to provide straps and toughening to support muscles contracting and to hold the shape, which makes the position easier to be in.

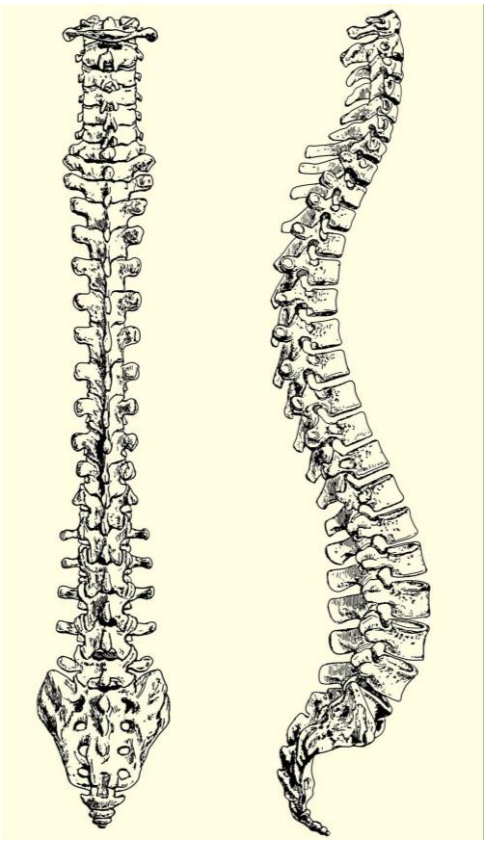
Postural patterns

Most activities that we do in everyday life involve reaching or bending forward. Whatever you do regularly, your body adapts to and you get good at. This is partly to do with fascial plasticity, but also to do with muscle strengthening/weakening, and neurological memory and patterning.

So we tend to get good at forward bending and spinal flexion, because we do it a lot, and less good at back bending and spinal extension, simply because we do it less frequently. These patterns become more and more set in over time. But they can always be opposed and loosened.

It's also interesting to note that the adult human fear reflex response is to go into a concentric posture, ie. a flexion, to protect the soft and vulnerable front of the body, and our default comfort position in times of anguish is the foetal position. So fear can be expressed physically as a flexion and may arise as an emotion when we begin to practice spinal extension. Opposing that, and practising backbends, may offer a chance to visit and address those fears.

Spinal anatomy

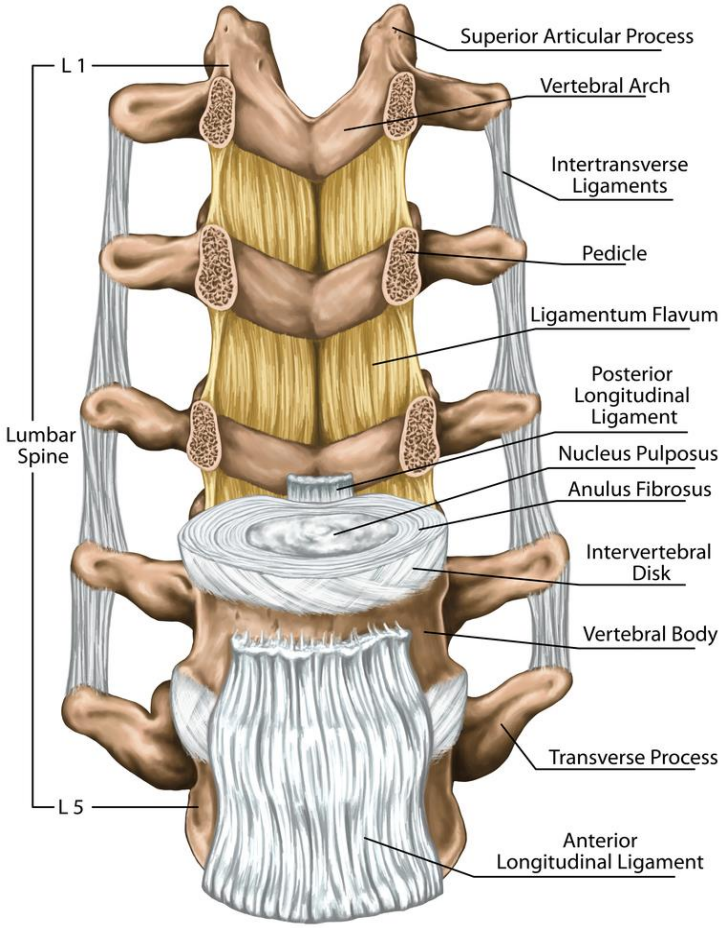


When we look at the spine from the front or back (back view shown) it looks symmetrical. Real people don't have a textbook spine and will likely have asymmetry, with some degree of scoliosis or wonky vertebrae. But the bones themselves tend towards a symmetrical arrangement and work on that basis.

When we look at the spine from the side however, we can see clearly that the front of the spine is very different from the back.

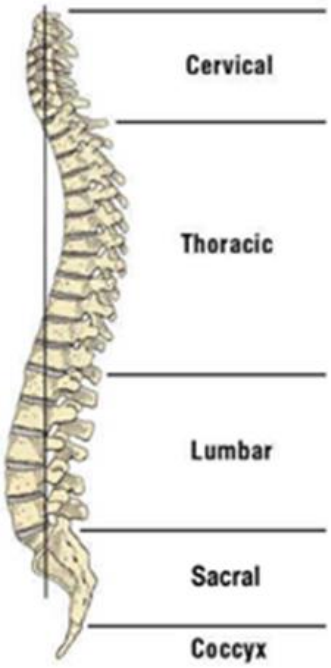
The back of the spine has spiny processes sticking out of the vertebrae which are for muscle attachment. The erector spinae muscle group runs the full length of the spine, both sides of the midline. These muscles are strong and tough.

The front of the spine is made up of the cotton-reel shaped vertebral bodies, with intervertebral discs in between. The discs are tough, with an outer layer made of cartilage, and gel in the centre. They are malleable, and healthy disks can squish and squash, allowing the spine to adapt to all sorts of body movement.



Illus: http://ainsworthinstitute.com/wp-content/uploads/2015/07/Spine-ligaments.jpg

At the front of the spine is a ligament called the anterior longitudinal ligament. It runs up the whole length of the spine. It is strong and tough and limits spinal extension to maintain this movement within a safe range. The length and stretchiness of this ligament will vary from person to person. People with limited practice of backbending may have a tighter than necessary ALL. A hypermobile person will have a long and easily extendable ALL. The nature of this ligament in an individual will depend on (a) their genetically determined structure, and (b) the type of movements they do frequently day to day.



Spinal curves

The other obvious characteristic of the spine that we notice when observing from the side is the spinal curves.

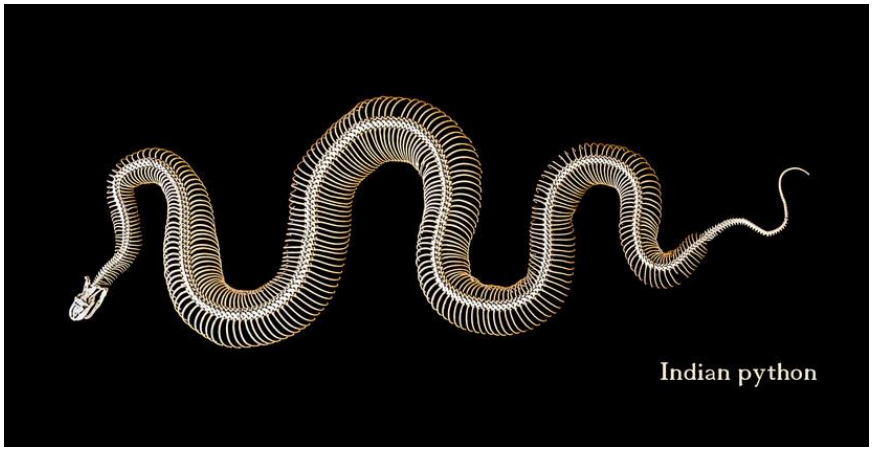
Looking from the back, the neck and lumbar are lordoses (concave) and the thoracic and sacrum are kyphoses (convex).

The kyphoses are more stable because of the presence of bony structures of the pelvis and ribs. The lordoses are less stable because of the lack of bony structures, and are supported only by soft tissues (muscle and fascia).

This means that the neck and lumbar spine provide a lot of potential for movement, and the thoracic and sacrum provide stability above and below the less stable regions of the spine.

[*Note: lordoses = plural of lordosis; kyphoses = plural of kyphosis*]

Snake spine



Humans have distinct spinal regions which are different in nature from one another. Snakes however have evolved to have a more even distribution of functionality throughout the lengthen of the spine. And for a snake that is pretty much their whole body!

When we are practising bhujangasana, cobra pose, we are looking to emulate the movement of a snake. Particularly the stance a cobra takes when it rears up without the use of arms, with incredible strength but maintaining its flexibility. Stira sukham asanam.

https://www.youtube.com/watch?v=xyaO11xDmhw

A snake is strong and flexible. If we develop snake-like spinal movements, we develop greater resilience. A weak or rigid back has a smaller range of resilience and is more likely to get injured, or develop pain and other knock-on problems, such as digestive disorders, anxiety and depression.

The human spine is structurally different from a snake spine, as we can see, and so our movements are never going to be exactly the same as those of a snake. But an attempt to find the beautiful movements of a snake can be useful, as with many of the poses in yoga which emulate aspects of the animal they are named after.

Backbends

A backbend is a movement or position where the front of the body is lengthened and the back of the body is shortened. A forward bend is a movement or position where the front of the body is shortened and the back of the body is lengthened. Both these movements happen in the sagittal plane.

Bhujangasana is an example of a simple backbend. It involves spinal and hip extension, but doesn't include any additional movements such as twisting or side bending in any planes other than the sagittal, as some other more complex poses do. Uttanasana is an example of a simple forward bend.

The anatomical term for backbending is extension. In a backbending pose the extension could be in the hip joint or in the spine or both, or in particular regions of the spine. For example, dwi pada pitham demonstrates extension in the hip joints, as well as the lumbar and thoracic regions of the spine, but flexion in the neck. Ardha salabhasana (version with chin on the floor) demonstrates extension in the hip joint, but minimal if any extension in the spine. Bhujangasana demonstrates extension in all regions of the spine, but minimal extension in the hip joint if you don't come up too far.

It is worth noting though that in any back bend, there will always be a pull on all the soft tissues through the whole front line of the body, no matter what the joints are doing. This includes the quadriceps, the abdominal wall, the front of the chest, as well as the deeper anterior longitudinal ligament.

Musculo-skeletal pathology

Common problems you may come across in yoga classes:

- History of disc prolapse
- Muscle injury
- Facet joint issues
- Lower back pain (often the cause is undiagnosed)
- Sciatica
- Osteoporosis
- Arthritis

Because facet joints are at the back and discs at the front, facet joint problems are an area for caution when practising bhujangasana, but disc problems not so much. Opening up the front of the spine creates space for the discs. Most back pain is in the soft tissues at the back, and so this is another area for caution in back bends, but not a contraindication.

The other issues listed are possible areas for caution. The best way to approach the pose is to start small and go step by step. In this way the student will discover his/her own current limits. Working too quickly into too strong an extension may exacerbate an existing condition, and may also send unaccustomed muscles into spasm.

Often people with back pain become fearful of exercise. This fear will tighten the muscles and will likely pull the spine more into flexion. Focusing on lengthening and on relaxation will be very helpful for these people. They need to work gently to tone muscles all around torso. Gentle stretching of damaged muscles will help release tension, and working them will stimulate the circulation, all assisting the healing process.

Bhujangasana

As we have a tendency to favour flexion, the practice of backbends is useful to maintain capacity for movement, promoting **resilience in the spine and soft tissues of the back**. Bhujangasana helps with this, and also strengthens the back muscles which maintains spinal stability as well as resilience.

The main differences between different forms of this pose are to do with arm position, how high you lift and the position of the head. Each of these **variations** has different implications. As yoga teachers we should be aware of the implications of the version(s) we teach.

Overall we are looking for **integrity in the curves of the spine**. This includes the neck, which should be congruent with the rest of the spine in order not to put strain onto it.

We are developing both **strength and flexibility** in bhujangasana. A lower version of the pose is not an easy option. In fact it works the back muscles quite hard. A high version of the pose might look accomplished but it is very easy for people with **hypermobility** to achieve. What they actually need is to develop strength to support their joints. They have

no need to increase flexibility (in fact this is best avoided). So a lower version of the pose would be more useful for them.

The lumbar spine has a lordotic curve, which means it begins already partially extended. A backbend will extend the lumbar spine further, but there's only so far it can go before you get bone against bone. **The thoracic spine has a kyphotic curve** and so when we practice a back bend, we are lessening the kyphosis and 'reversing the curve'. Many people are quite locked up in the upper back and find this difficult.

Giving the instruction to reach back with the legs, and to reach forward with the breast bone will help to **draw the extension up into the upper back**, which is where most people need to work. This instruction is also useful for people with **hyperkyphosis**.

The belly is supported by the floor so in terms of feeling exposed and opposing the fear reflex, it's a fairly safe and protected position to be in. For people who experience fear in stronger backbends such as dhanurasana and ustrasana, practising bhujangasana could be a good place to start addressing those issues and relaxing despite the fear.

Using the arms to push up leads to various problems. It tends to lock and lift the shoulders which is uncomfortable for the shoulders and restricts the front of the chest which we are trying to open. It also means that we are using arm strength to lift rather than using the back muscles, which we want to work in order to strengthen them. Also there is a danger of pushing up too high which over extends the lumbar right to its limit and avoids working into the thoracic, where stiffness often lies.

One way of preventing students from using the arms is by starting with the hands further forward than in the pictures above. An instruction to **draw the shoulders down and back** can be useful.

For students with lower back pain, **working with the feet apart** will make it easier on the back and enable them to practise the pose.

Hyperextension of the neck puts undue strain on the delicate facet joints and muscles of the back of the neck. It is best avoided. People who exhibit hyperextension of the neck in their standing posture certainly need to be watched to ensure they don't increase the amount of hyperextension even further. **Gaze points** can be useful to deal with this, eg. look towards the horizon, look at a point on the floor in front of you, look at the front of your mat (depending on the degree of lift and the structure of the individual).

A summary of some possible teaching points and teaching notes for the practice and teaching of Bhujangasana:

- The fingers remain together.
- Start with forehead on the floor and fingertips in line with the eyes.
- Slide your nose and chin along the floor to lengthen your neck as you come up.
- Feel long in your body and raise up like a cobra.
- Elbows may come away from the floor, but keep them tucked in by your sides.
- Do not jerk the body up, but come up gracefully.
- The navel and lower abdomen remain on the floor.
- Avoid hyperextension in the neck (throwing the head right back) as this is not safe for many people.
- Feet are together, but separating the feet is a good modification for people with lower back issues as it takes the strain off that area.
- Reach back with your feet and forward with your breast bone.
- There is minimum weight on the hands, the body is supported mainly by the back muscles.
- The lower back should not be extended beyond its comfortable limit – work should be focused on releasing between the shoulder blades and extending the thoracic spine. Sometimes coming up less far is a better place to work.
- This pose works on both flexibility of the spine and strength of the back muscles.
- Shoulders should be down away from the ears, and back, the heart centre opening.
- Contraindicated for pregnancy as soon as it becomes uncomfortable to lie prone. A modification would be to bend the knees under the body, knees apart, and rest on elbows.
- Recent abdominal surgery and hernia are contraindicated for this pose. Take care with high blood pressure.
- A forward bend would be a suitable counterpose, such as adho mukha svanasana (though more spinal flexion after a strong static bhujangasana may be needed), uttanasana, paschimottanasana, child pose.