Vertebral column and posture

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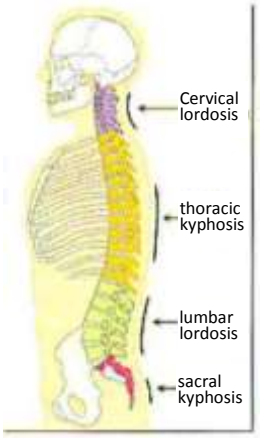
Altered curvatures as synonym of altered functions and pathology

"Health is precious. People understand it only if they lose it or when they suffer!"

Alterations of the curvatures may result in a rigid and painful spine that can prevent people from moving freely. Even everyday gestures may become difficult. Only in that moment do people realize that something is wrong and become aware of problems and their inherent limitations.

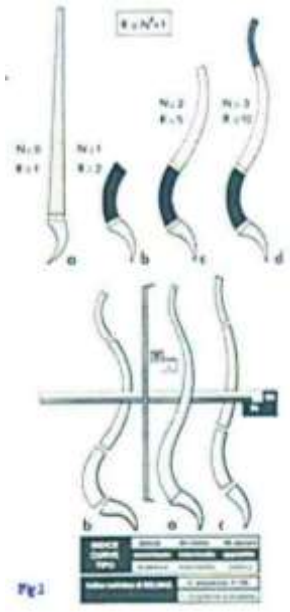
The back, the spine and its curvatures are fundamental. With their shape and balance they allow a right mobility, flexibility and support to the body. In the prenatal phase the spine presents only one big concave anteriorly curvature. At birth the spine is completely straight. The first curvature develops as the babies start to crawl in the phase of the quadrupedal movement. In order to explore the world and to avoid obstacles, babies develop a curve in their neck, the cervical lordosis. The next step to the erect position generates the second curvature, the lumbar lordosis. The middle curvature formed by these two is the thoracic kyphosis. If the two lordosis develop correctly, the same happens to the kyphosis. Otherwise there will be a hyperkyphosis or a hypokyphosis. The vertebral column is composed of four curvatures, which are respectively cervical lordosis (C1-C7), thoracic kyphosis (T1-T12), lumbar lordosis (L1-L5) and sacrococcygeal kyphosis (S1-S4/S5 + 2-4 coccygeal vertebrae). In men of average height, the spine measures about 75 cm and it is composed of 24 classical vertebrae, excluding the sacrococcygeal vertebrae). This amazing architecture ranges from the bottom of the cranium to the sacrococcygeal region. Cervical lordosis and lumbar lordosis are concave posteriorly, whereas kyphosis are concave anteriorly. It is also worth mentioning scoliosis, a medical condition consisting in one or more alterations of the physiological curvatures.



VERTEBRAL COLUMN TASKS

The higher part of the spine supports the head, allows the horizontal sight and the rotation of the head. The thoracic vertebrae are connected to the ribs in order to protect the organs. Lungs, heart, liver, stomach, pancreas, spleen, and kidneys are as fragile as essential. The lumbar are the strongest vertebrae since they have to underpin the vertebrae above, the trunk and the pelvis. They are more involved in pathologies than the thoracic and the cervical vertebrae. Also the cervical section is more

and more affected by muscle tensions. Changes in lifestyle and stress involve the muscles of respiration, which are directly connected to the cervical vertebrae. For these reasons, radiology deals especially with these two sections of the spine. The structural damage of the vertebrae is not only a question of time passing and muscle tensions, but it is also proportionate to lifestyle, work, sport, stress, and body weight. Because of its essential functions (stability, protection of the bone marrow, load absorber, conveyor of information, body support, etc.), the vertebral column is known as “the tree of life”. Its curvatures represent its strength, resistance and elasticity. When the curvatures are altered (hyperlordosis, hyperkyphosis, redacted, rectified or inverted), their functionality is altered as well. The column is made of “bone rings”, the vertebrae, and in the spinal canal is where the spinal marrow flows. In fact, since it is a delicate and important fluid, it needs a safe place to stay. Between each vertebra there is a shock-absorbing structure called the intervertebral disc, which is made of fibrous material resistant to compressions and torsions. Inside the intervertebral discs there is the pulpy nucleus, responsible for the slipped disc pathology. When curvatures are too accentuated, the vertebrae are likely to develop arthrosis. Whereas reduced curvatures are less resistant to compressions and can lead to protrusions and slipped disc. In recent years some schools of thought have tried to reduce the lumbar curvature by teaching to rotate backward the pelvis in retroversion. They thought the spine in this way would have been more protected from loads, damages and pain. It has recently been discovered, however, than reducing the physiological lordosis exposes the back to a loss of resistance and to more dangerous pathologies. A curvature resulting too reduced is worse than a curvature that is too accentuated. To confirm this statement, a biomechanical study concerning the resistance of the column according to the curvatures was published on Kapandij, one of the most used university study book on articular physiology. The study shows a mathematic formula on the resistance of the column demonstrating what was said before. The resistance of the spine is given by the number of curvatures squared plus one. So if the column has only one curvature the result will be two; if it has two curvatures the result will be five; if the curvatures are three, as it should be by nature, resistance will correspond to ten (Fig.1).



It is all about muscles

The curvatures exist, remain as they are or change because of the muscles. So, if you are a very tense, anxious and worried person, this status will reflect on the muscular system and, as a consequence, on the articular system. That is why too stimulated joints show problems such as capsulitis, synovitis,

hyper-pressures, discal compression, compression of the nervous roots, tendinitis, bursitis, arthrosis, pains, etc.

Also suffering internal organs can become an uninterrupted source of muscular and skeletal disturb due to the continuous impulse of annoyance they send to the brain. These signals, called “silent irritative thorns”, convert in neuromuscular excitation with which the body tries to protect the area of the suffering organ.

Muscles can exercise tensions and compressions, often forgetting to relax. Therefore, muscles are always too toned and this is the reason why all people suffer from the same problems and neuromuscular diseases. Do not confuse the muscular tone (tension) with its volume (tropism). We can have very thin muscles but with such high inner tone that it can destroy a solid joint such as the hip. Therefore never trust the appearance and consider the tension instead. Never strengthen a hypertonic muscle; it needs to be stretched first in order to balance its tension. Only after stretching it, the muscle can regain its volume to get a perfect balance.

The muscular strengthening on a suffering body with an altered posture can only exacerbate the existing problems.

Every kind of exercise, sport or physical activity should be practiced only by healthy people and always after having worked on tensions and posture first.

In the past people used to do strengthening and toning exercises, while now scientific evidence proves that postural balance and wellness are gained through an improvement of muscular and articular tensions. It is important to stretch muscles since they spend their whole life flexing to allow the body actions, from pushing blood through the circulatory system or the food through the intestine, to running or practicing sports.

Cats are known for their agility, plasticity and flexibility and they stretch everyday more than once. That is why we should do postural stretching or postural rebalance. This article will specifically deal with the highest part of the vertebral column, i.e. the cervical spine. It is characterized by a lordotic curvature that, thanks to the joints (each vertebra is connected to the previous one and the next one), allows wide movements. One of these is directing the look in every direction in a quick and functional way in order to see and hear properly, to see where we put our feet, park our car, find food and shelter and run away from danger. Furthermore, since the inner ear is provided with an extremely sensitive and accurate balance system (the labyrinth, which allows orientation and stability), every damage caused by the wrong position of the cervical tract or of the head and by malocclusions will affect the entire posture. So if the cervical lordosis presents an incorrect curvature (because of accidents, whiplash, introverted character, problems concerning the odontostomatognathic system, breathing, visual or auditive problems) the head will take incorrect positions (too tilted forward, backward or on one side).

If this happens, the labyrinth will continue to receive altered information from the incorrect position of the head and, as a consequence, it will constantly send altered information to the whole Tonic Postural System. Hereinafter you will find how abnormal tensions and joint pain can generate in different parts of the body.

TRAUMA

It is important to specify that when the cervical spine gets stiff because of trauma or whiplash, the tensions reach all the muscular, connective and fascial chains. In addition, if the trauma is violent it propagates along the column also due to the dura mater, which is a thick membrane that surrounds and protects the spinal cord. When this happens, the effect of the trauma involves the neurological part and there could be consequences also on the trunk, pelvis, legs and feet.

It is known that whiplash generates immediate stiffness of neck muscles trying to defend the neck itself during the trauma and after it by reducing the post-trauma pain (antalgic contracture). This contracture tends to rectificate the cervical spine altering its physiological curve. When there is a rectification or even an inversion of the curvature, it causes a lot of inconvenience to movement and stability: pain, dizziness, disorientation, concentration problems, altered sleep, blurry memory, headache, nausea, tingling or paresthesia in the arms, shoulder pain, visual and auditive problems, leg weakness, pounding on the temporomandibular joint, swallowing problems, etc.

This data shows how important and sensitive the cervical spine is. Accidents are not the only responsible for cervical curvature modification and bad arthrosis. Trauma in other parts of the body can affect the cervical spine and so do incorrect daily postures at school, at work (keeping the phone close to the ear with a lifted shoulder), in front of a computer, in the car, etc.

Even singers, for professional reasons, are subject to modifications of the cervical curvature for timbre modulation. Also sitting in the wrong way, making the lumbar region assuming a kyphotic position instead of leaning against the ischium following the physiological lordosis, leads the whole column to dangerous modifications (see the example in the photograph).

Fig. 1 In the first photograph the cervical area is suffering from a bad posture of the lumbar tract; in the second photograph damages and bad posture of the lumbar tract and their consequences on the cervical tract are avoided by using a special pillow called Pancafit-back®.

IN THE STUDIO

When patients suffer from cervical spine problems, we analyze all their symptoms. Through kinesiology tests, which analyze the movement, we evaluate the gestures patients cannot do anymore or they do with difficulties, considering radiologist and medical specialist evaluations. Using a stabilometric and baropodometric platform, we do other tests to understand if the cervical problem can originate from occlusion, swallowing or visual problems or if it is related to a trauma that had happened before the pain started.

People forget but not the body

Other clinical tests are used to understand if the cervical pain is related to scars due to a trauma or surgery. Nowadays there is huge evidence demonstrating how influential a scar is on posture and functionality. A scar can cause pain also in areas that are far from the scar itself. Moreover, we also test the diaphragm functionality, for its importance in the breathing process and therefore its relationship with neck and shoulders muscles. In many cases we see long-lasting benefits in the cervical spine simply by unblocking the diaphragm. It is impossible to intervene directly on the cervical spine without understanding first where the problem comes from. To underline the importance and sensitivity of this area, here are the possible consequences of cervical spine alterations. Stiffness in that area, limitation in the movements (sometimes even going into reverse while driving becomes impossible), cervical pain, shoulder pain, headache, migraine, visual problems (in the neck there are the same nerves that arrive at the eyes), auditive problems, disturbance at the trigeminal nerve, occlusion problems and problems in the temporomandibular joint. Problems of memory, orientation, visual perception, sleep and concentration, voice, swallowing and digestion. In the future the patient can develop protrusions, arthrosis, slipped disc, tensions of the dura mater and of the spinal cord, which can reduce the force or alter arm and leg sensitivity. Alterations in this area can also increase the risk for carpal tunnel, trigger finger, epicondylitis, etc. This should be enough for you to know the importance of the cervical tract, in order to keep it perfectly functional.

POSTURAL BALANCE THROUGH THE TECHNIQUE OF GLOBAL NON-COMPENSATED MUSCULAR STRETCHING

Our method is founded on the balance of the tensions in the muscular chains, which are responsible for the alterations in vertebral column curvatures, and guarantees skeletal, muscular and articular benefits. Working with specific postures, assumed for a specific time together with breathing techniques to support posture changes, it is possible to intervene on muscular, fascial and connective chains at the same time and to free the joints blocked by tense and short muscles. Pancafit® is an innovative tool

through which it is possible to balance posture by acting on all muscular chains. It works with the force of gravity and a series of exercises. Through global non- compensated muscular stretching it is possible to restore muscle and also joint elasticity, as broadly confirmed by academic evidence. This allows the right alignment of the general posture and, as a consequence, it gives the body more functionality, elasticity, balance and fluency in sports and in common gestures. In the image you can see the changes after a cervical treatment.

Photographs before and after the treatment (frontal vision)

Photographs before and after the treatment (lateral vision)

For more information on the Raggi Method®- Pancafit® please address to
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