

About Pilates, Ribs and Spirals

An Article by Anna Schrefl. Model: Julia Hechenblaikner

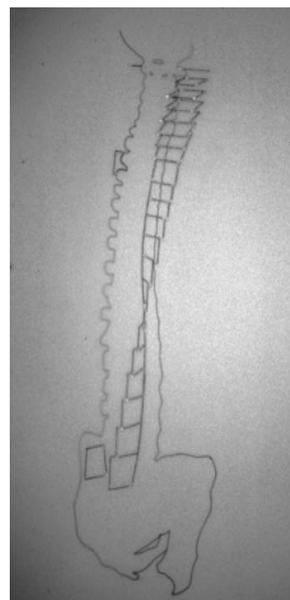
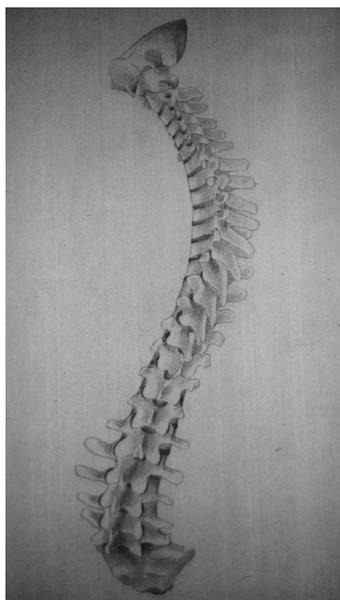
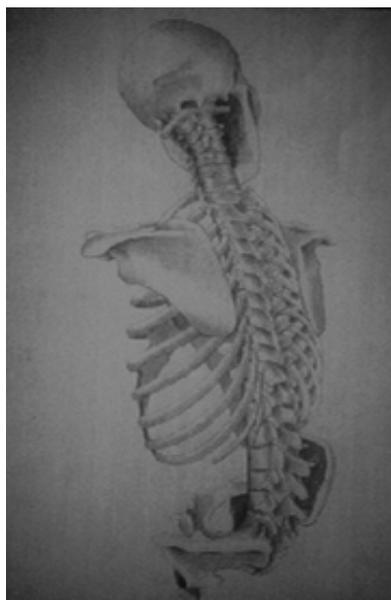
When we walk and run, turn, twist, bend forward or to the side, our spine needs to be flexible in order to allow these movements. Within addition to the spine, our ribs and ribcage need to have mobility as well.

In our Pilates training we are pretty much occupied with everything but the ribs: our Powerhouse (lumbar-pelvic area), our spine, shoulder girdle and hips, our extremities, head and neck. We tend to forget about the movement potential of our ribs and the importance of integrating them in the movement of our trunk.

And yes, the word “cage” already implies that we might think of the ribcage as one solid unit. Nevertheless, our ribcage, or lets better take the word ‘chest’, is made for movement, for rotation and spiralling.

Structure: We do have 12 pairs of ribs, each elliptically shaped and articulating with the thoracic spine. Seven “true” ribs (1st to the 7th) are also directly connected with the sternum, three “false” ribs (8th to the 10th) are indirectly connected and another two “false” ribs (11th and 12th, our “floating” ribs) are not at all connected to the sternum.

Here are some interesting details:



© Spiraldynamik AG

Our spine follows a spiral-like construction. The positions of the vertebrae’s facet joints are spatially changing along the spine. Whilst in the lumbar spine they lie in the sagittal plane, they change their orientation towards the frontal plane in the thoracic spine and towards the transverse plane in the cervical spine (see the third picture above).

Due to the structure of the thoracic vertebrae, we have about 55 degrees of freedom of movement to rotate our thorax, compared to around 5 degrees in the lumbar spine. You can see: our thorax, our chest, is made for rotations.

What about the ribs?

Most of our ribs are connected via two joints (articulatio capitis costae and costotransversaria) to the spine and one joint to the sternum (articulatio sternocostalis). Morphologically most of these joints are categorised as arthrodial (plane) joints, firmly supported by ligaments.

Though their range of motion is small, the number and form of the joints allow the chest a three-dimensional range of motion. Also muscle-wise the thorax is equipped with a large external and internal oblique muscle system for rotation.

Organisation: The upper ribs (Nr.1+2) are muscularly connected to the head and neck, the lowest ribs (Nr.11+12) are muscularly connected to the pelvis. From a functional movement perspective we can note that “the upper ribs are following the head, the lower ribs the pelvis.”

The ribs are flexible, they can adapt to movements of the trunk and the chest. When we inhale, the external intercostal muscles are getting activated and the space between the ribs is getting wider. The upper ribs plus the sternum raise up, the lower ribs mostly widen to the side. When we exhale, the space between the ribs is narrowing again.

When we bend to one side, the space between the ribs of this side is reduced as well.

Rotations are more complex. The space between the ribs of the side we twist/rotate towards is getting more narrow. The curve of these ribs (on the side we rotate towards) is getting slightly more elliptically. The space between the ribs of the other side (the one which is moving forward) is getting wider. The curve of these ribs is getting slightly rounder.



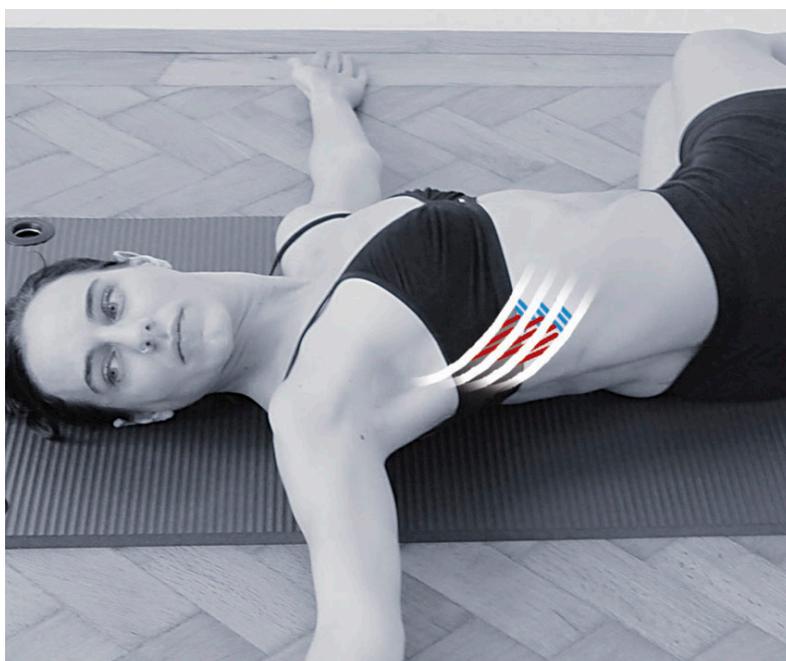
Rotating forwards Note:

Ribs: the space between the ribs is getting wider, the curve of the ribs is slightly changing.

Muscles: The internal intercostal muscles (blue) are getting stretched, they need to lengthen. The external intercostal muscles (red) are getting activated and shorter.

In general: The external oblique muscle system of the trunk is getting activated, the internal oblique muscle system needs to lengthen.

The ribs are spiralling with the spine forward and up.



Rotating backwards Note:

Ribs: the space between the ribs is getting more narrow, the curve of the ribs is slightly changing.

Muscles: The external intercostal muscles (red) are getting stretched, they need to lengthen. The internal intercostal muscles (blue) are getting activated and shorter.

In general: The internal oblique muscle system of the trunk is getting activated, the external oblique muscle system needs to lengthen.

The ribs are spiralling with the spine backward and up.

Training: In our Pilates training we need to jump out of our “box” thinking. Rotations of the thorax and spine are essential for human movements and well-being.

To train our Powerhouse, stabilising the lumbar-pelvic area and lengthening the spine, is a great way to start. The elongation of the spine is the premise of the spine and body to rotate and to spiral functionally correctly. But do not stop there. Think of a dynamic stability. Creating length and elongation in our body and, adapted to different movement requests, keeping this length and elongation where it is needed, is a more lively way of dealing with stability. A twist/rotation of the spine needs of course stability as well. The stability of keeping the axis of the rotation centred, keeping an active support for the joints and avoiding unwanted shearing forces.

If you do already integrate a lot of rotational movements in your training: great!

It is worth looking then at the 3-dimensionality of a rotation. Turning to the right side, for instance is more than a twist, it creates a 3-dimensional elongation, a spiral, in our body. Observing and supporting the integration of our ribs in a rotation (upper ribs are following the head, lower ribs the pelvis; the ribs of one side are opening, on the other side they are closing) will help us to support the spiral-like movement and to benefit from our full movement potential.

Below in the “Exercises part” I listed some of my favourite exercises for rotating the thorax.

If you want to learn more about spirals and the great architecture of our body:

The Spiraldynamik® Academy is offering the first Basic Spiraldynamik® Course taught in English. Starting in May 2016 in Zürich.

How to integrate our training into daily life activity



Walking, running, climbing up the stairs:
Our trunk is rotating and spiraling.

The upper ribs are following the head, the lower ribs are following the pelvis.

The ribs of the left side which is rotating forward (blue arrow) are „opening“, the ribs of the other side are „closing“.

The internal oblique muscle system (red lines) of the left side needs to lengthen to allow this movement.

Dynamic stability: The pelvis of her left side has to stabilise while the right pelvis moves forward (taking a step). The spine rotates, the ribs are spiraling forward and up (imagine a spiral staircase), the left arm swings forward (in the picture the swing of the arm is exaggerated).

Part – Exercises

1) Reverse Tic Toc (with an elastic band)



On the side: The legs are positioned in a 90 degrees angle on top of each other. Both arms are stretched to the front, an elastic band is placed around the chest. First rotate the upper side of the chest forward with the arm reaching out on top of the other, keeping the pelvis stable.



Then reach the arm up to the ceiling and rotate the chest backwards, the pelvis stays stable, the head follows the movement. Feel the movement and integration of the ribs. The upper ribs are following the head, the lower ribs are following the pelvis. The spine is lengthening (no arching or tucking under).

2) Reverse Tic Toc (with small weights)



On the side (see Exercise Nr.1), hold a small weight in each hand. Reach forward and rotate the spine, pelvis stays stable. Watch out that the spine is initiating the movement, not the shoulders.



Then reach the arm up to the ceiling, lifting the head as well.



Slowly open the arm, rotate the spine and the chest backwards. In the end place the arm and head to the floor and feel the stretch diagonally through the body.

3) Criss Cross Variation



Supine position, the pelvis and lower back is anchored on the mat. The hands are behind the neck supporting the head, lengthen the spine and roll slightly up (to about the tips of the shoulder blades).



Rotate your upper body to the right side. Place your right elbow on the mat and push it into the mat in order to rotate even further, let your left pelvic half lift up in order to go further.



Now keep the chest and upper body rotating to the right side and bring your left pelvic half back to the mat. Feel the extra stretch and spiral-like movement: the sternum reaches to the right side and up, the left pelvic half pushes down.

4) Sitting Twist Variation Nr. 1 (with an elastic band)



Sitting position, legs crossed in front. Place an elastic band around your chest, holding the band with your hands.



Reach the right arm forward and feel how the elastic band gives your right ribs and back the impulse to rotate forward. Then reach the left arm forward and rotate to the other side forward. Alternately twist/rotate to the left and right side.

5) Sitting Twist Variation Nr. 2 (with an elastic band)



Sitting position, left leg crossed in front. Place the elastic band underneath the left buttock, holding it with the left hand.



Anchor the shoulders and rotate to the right side, against the resistance of the band. Imagine following a spiral staircase upwards with the spine and ribs.

6) Cat Stretch with Rotations



Quadruped position, arms are slightly bent, fingers are pointing towards each other, elbows to the side. Shoulder nicely connected into the back.



First start to rotate from the sternum towards your left and right elbow, chest and head are following, pelvis stays stable.



Then reach the right arm to the left side, deepen the rotation of the spine, feel the stretch of the oblique muscle and fascia system (diagonally from the back to the front). Change to the other side.

Text: Anna Schrefl

Model: Julia Hechenblaikner

Fotos: Béla Baptiste

First English Basic Spiraldynamik® Course:

The course BASIC Med & Move is the Spiraldynamik® basic training for people who have completed a professional education in the field of medicine, therapy or movement education. It is knowledge oriented and practical.

Within 14 days you will experience the relationship between anatomy and movement potential, between theory and practice. You will have the competence to understand the global relationships in human movement coordination as well as recognize and classify individual posture and movement habits. You will learn to apply Spiraldynamik® personally and with your patients or clients in a targeted and effective way and optimize your sense of physical well-being.

For more information:

akademie@spiraldynamik.com

anna.schrefl@pilatessystem.eu

www.spiraldynamik.com

www.pilatessystem.eu

Anna Schrefl

Anna Schrefl studied contemporary dance at the Amsterdam School of Arts and the Modern Dance Academy in Rotterdam. In 2001 she finalized her Pilates training in New York with Romana Kryzanowska. She completed her Pilates Teacher Trainer training under Ton Voogt and Michael Fritzke and established in 2006 the "Pilates System Europe - Certification Program" with the supervision of Ton and Michael. Anna teaches special seminars for Pilates trainers around Europe and also works as a freelance choreographer. Since 2013 she is a certified advanced specialist in Spiraldynamik® and is currently becoming a lecturer of the Spiraldynamik®. Since 2015 she takes part in the Master of Dance Science Programme of the University of Bern. Anna Schrefl is the director of Pilates System Europe® in Vienna.

Foto: Bluhm

