

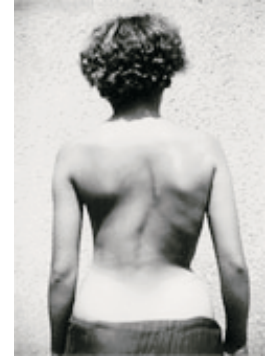
Katharina Schroth's
three-dimensional scoliosis treatment

author Christa Lehnert-Schroth

Treatment concept

The context of these instructions are dedicated or been applied for patients with a thoracal right scoliosis. (For a left thoracic scoliosis please reverse right to left words. Please use a handmirror to reverse photos.) The concept involves **Schroth** correction principles, which are incorporated into every exercise and are always associated with targeted or directed breathing.

Active elongation (attainment of upright posture) can be performed with and without apparatus, always with an occipital push with minute sideward stretching movements in an upward (cephalad) direction. **Postural correction** rectifies both the lateral contours as well as the contours of the patient's front and back. This should be pursued to the level of "over-correction". The illustration (right) shows three-curve scoliosis of the thoracic spine with definite convexity to the right and a compensatory lumbar curve.

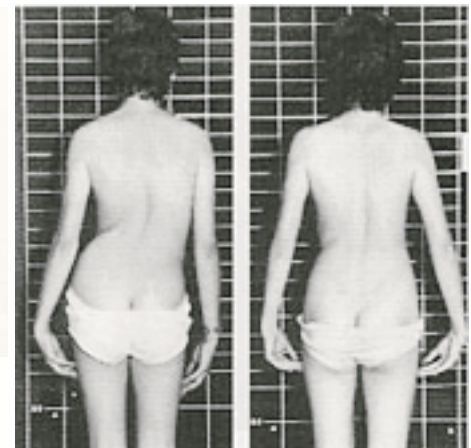
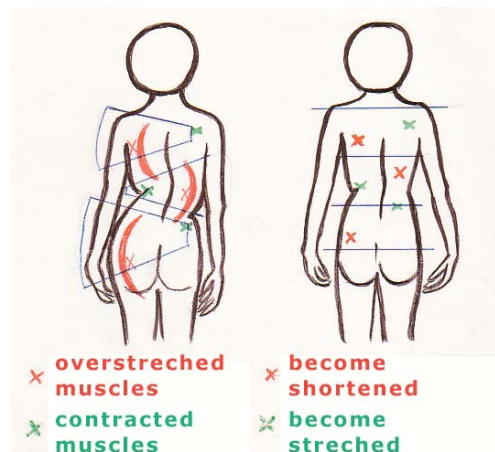


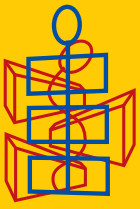
The exercise photo (left) demonstrates that it is possible to lift the depressed (concave) side laterally and to make the convex side appear concave (although not in every case, of course). The spine itself follows these contours only slowly. Thus it is also possible to improve the degree of the curve.

"Rotational angular breathing", which is performed in the three familiar directions along the arms of an imaginary right-angle, widens the concavities and uses the ribs as long lever arms to derotate the rib cage.



Consolidation of exercise outcome is already initiated by the repeated performance of the exercise. However, this can be further enhanced by robust (muscle mantle) tension, which should of course only be performed **after** all trunk segments have been "put in order".





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The difference in spine shapes (not the angle of curvature!) is one **problem** influencing treatment. A major difference is seen in the lowest spinal segment. Here the differing degree of pelvic displacement indicates whether three-curve or four-curve scoliosis is present (see link "What is scoliosis?").

Avoidance of incorrect movements is of the utmost importance, even though these may appear to be very useful. On this subject see also the illustrated article by C. Lehnert-Schroth "Our experience with orthotic compensation for leg length inequality in the treatment of scoliosis", *Zeitschrift für Orthopädische Praxis*, April 1991, vol. 27, no. 4, pages 255-262:

this article explains that orthotic compensation does not have to be implemented in every case where leg length inequality and pelvic tilt are thought to be present. Often this condition can be compensated for by active **Schroth** pelvic corrections.

However, it will also be apparent that three-dimensional **Schroth** treatment cannot be learned ad hoc from my homepage. However, everything will become clear and straightforward after an introductory course (see link to "Courses") and reading the textbook.



<< incorrect
correct >>



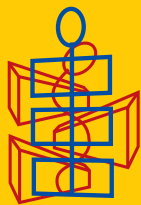
The pictures below illustrate the **Schroth principles**. The results show whether the application has been correct.



At the start of treatment

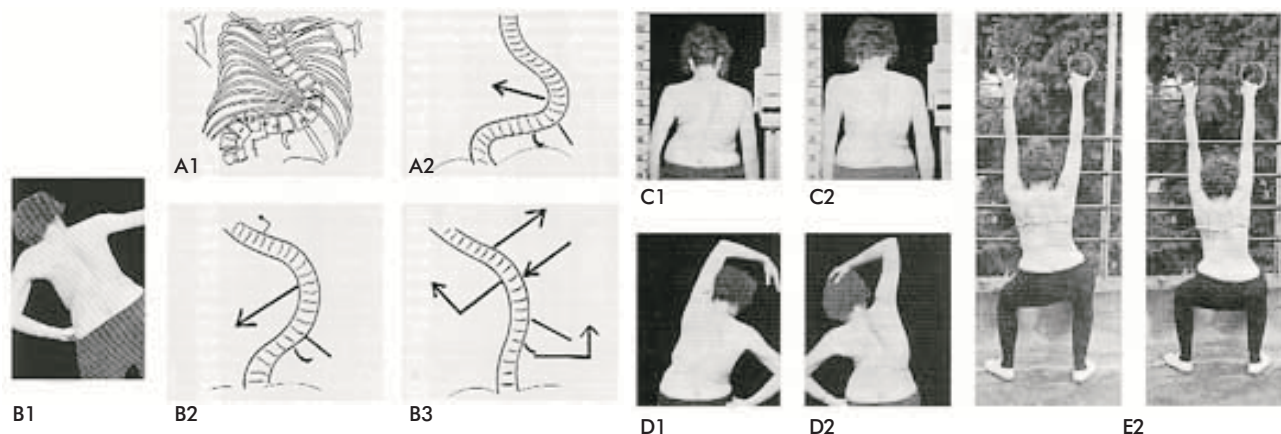


Success after 6 weeks



Treatment concept

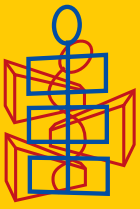
The illustration below shows a page from the textbook and provides a graphic explanation of the **clinical and radiological difference**.



Legend to illustration

The clinical and radiological picture

- A1) Sketch of X-ray from a 37-year-old woman
- A2) Line drawing of the spine and the 11th and 12th ribs on the right side = position at extreme exhalation. The 12th rib is deformed and rubs against the iliac crest (cf. d1). The arrow shows the direction of the ribs on the concave side, which are in the maximal inhalation position.
- B1) Schroth exercise: The upper body is inclined to the left using active elongation (stretching), thus relieving and expanding the lumbar concavity on the right side. The "false" ribs can now be lifted laterally (sideways) and cephalad (towards the head). The inactive lumbar muscles are forced to hold this position and thus are strengthened. The lumbar curve appears to be more stretched. The left concave side is also relieved, with the result that these ribs are widened laterally and cephalad and can be pressed dorsally (backwards). As a result of torsion, the patient's neck also shows a certain amount of hump formation and a concavity, even though no ribs are present there. This minimal curve amplitude can be reversed very easily using the "occipital push" in which the head is positioned as an extension of the thoracic spinal curve and the chin is turned towards the side of the rib hump.
- B2) During the exercise, as a result of stretching of the spine, the ribs on the concave side are directed caudally (downwards), and this is why the ribs may and must be lifted as described above, even though they appear horizontal on the X-ray. Because of the straightening of the lumbar spine, the upper part of the thoracic curve and the cervical curve now appear to be larger. For this reason there needs to be a counter-movement to the right in this region using the "occipital push" and turning the head and neck.
- B3) Diagram illustrating the ideal exercise direction = straightening of the lumbar spine, stretching the spine and the concave ribcage segments "in a right angle" to the maximum extent still anatomically possible. This then eliminates pain caused by friction below the rib hump. Above the rib hump "shoulder counter-traction" is still needed: this is achieved by pulling the right arm horizontally laterally from the concavity of the upper spinal curve and simultaneously derotating and tensing together the posterior and lateral rib hump overhang.
- C1) Photograph of status at the start of treatment.
- C2) Outcome after a 6-week course of treatment incorporating the above points.
- D1) When the upper body is inclined towards the convex side, the lumbar curve becomes larger. The picture becomes distorted. The lumbar curve is displaced laterally. As a result torsion is also amplified and this also has repercussions on the curves above.
- D2) When the upper body is inclined towards the concave side, the thoracic curve becomes larger. The position of the pelvis is now more correct. From this point on, active correction is performed according to Schroth principles: this enforces "right-angled" widening and ventilation of the more cephalad (higher) concavities, as a result of which the disadvantages are converted into advantages. However, trunk side-bends should never be made in cases of scoliosis. Only an inclination towards the thoracic concave side, during which there is narrowing neither on the right nor left side, can favourably influence the deformities of the trunk.



Treatment concept

Legend to illustration

The clinical and radiological picture

- E) "Hip loop" exercise combining all five pelvic corrections. By stretching both sides, this exercise relieves all concavities in the trunk.
- E1) Imperfect execution because the right hip is still elevated, as a result of which the lumbar concavity cannot be stretched.
- E2) Diagonal traction with the right pelvis causes stretching of the left concave side and of the right concavity below the rib hump, and this straightens the lumbar spine. This is a favourable starting position for orthopaedic breathing exercises of a passive and active nature. Each correction exercise is followed by robust muscle mantle tension during the exhalation phase.

All this sounds complicated but it becomes straightforward when the exercises are performed.