In the present state we know quite a lot about the biomechanics of healthy and pathological spines. That is why it’s incomprehensible that for a seemingly simple question like the place of axial rotation of the thoracic spine, the literature gives contradicting results. The importance of which is obvious. During correction of a scoliotic deformity, one of the hardest tasks is the derotation of the thoracic spine. When trying to correct the pathological rotation with the diverse set of implants available, not knowing the physiological rotation is a luxury we can’t afford. We wanted to clarify this question so we examined the thoracic spine in many different ways.

First we tried to examine the problem from a geometrical point of view, that is we examined the geometrical structure of the vertebra to see if we can find connections from which we can determine the rotational axis.
Determination of the axial rotational axis of the spine

During the next set of examinations we tried to model the different rotational axes of the thoracic spine by studying the change in volume in the spinal canal with the aid of plastic spines. Finally, we used cadaver spines with rib stubs and later with the whole rib cage, which we rotated and examined with X-rays and photographs.
After evaluating the results of our experiments, we determined that the most likely place for the rotational axis of the thoracic spine is the point that falls on the median-sagittal plane, in the anterior portion of the spinal canal.