

# Axial torsion

Axial [torsion](#) tests replicate anticipated or recorded service loading conditions that involve combinations of [axial](#) or linear loading with torsional or rotary loading. They are also used by materials developers to characterize the behavior of materials over a wide range of loading ratios.

To investigate the [biomechanics](#) in the development of [scoliosis](#) due to [intervertebral disc](#) and [facet joint degeneration](#), Zheng et al. enrolled 39 cases of fresh-frozen [lumbar spine](#) specimens and underwent CT scanning and [3D reconstruction](#). An [Osirix Dicom](#) imaging system was to assess the [degeneration](#) of the intervertebral disc and facet joints, and mechanical loading was conducted using a spine mechanical instrument with the frequency set at plus/minus 7.5 NM, 0.005 Hz. [Range of motion](#) (ROM) and [neutral zone](#) (NZ) of 39 cadaveric lumbar spines were tested.

Degeneration existed in all 39 cases of the lumbar specimens: the [Cobb angle](#) >10° in 5 cases (degenerative scoliosis (DS) group), between 3° and 10° in 9 cases (pre-degenerative scoliosis (PS) group) and <3° in 25 cases (no scoliosis (NS) group). The axial torsion (AT) [range of motion](#) (ROMAT) and the NZ of the DS and PS groups was greater than in the NS group and increased with increasing Cobb angle. A significant correlation was found between the degeneration of the intervertebral disc and the AT and the AT correlated with the Cobb angle and facet joint degeneration.

The [axial torsion](#) correlated with [intervertebral disc degeneration](#) and [facet joint degeneration](#), which might be a mechanic factor in the occurrence and development of [degenerative scoliosis](#) <sup>1)</sup>.

<sup>1)</sup>

Zheng J, Yang Y, Cheng B, Cook D. Exploring the pathological role of intervertebral disc and facet joint in the development of degenerative scoliosis by biomechanical methods. Clin Biomech (Bristol, Avon). 2019 Aug 16;70:83-88. doi: 10.1016/j.clinbiomech.2019.08.006. [Epub ahead of print] PubMed PMID: 31445401.

From:

<https://neurosurgerywiki.com/wiki/> - **Neurosurgery Wiki**

Permanent link:

[https://neurosurgerywiki.com/wiki/doku.php?id=axial\\_torsion](https://neurosurgerywiki.com/wiki/doku.php?id=axial_torsion)

Last update: **2024/06/07 02:53**

