Accepted Manuscript

Title: The biomechanical impact of the facet tropism on the intervertebral disc and facet joints in the cervical spine

Author: Xin Rong, Beiyu Wang, Chen Ding, Yuxiao Deng, Hua Chen, Yang Meng, Weijie Yan, Hao Liu

PII: S1529-9430(17)30327-3
DOI: http://dx.doi.org/doi: 10.1016/j.spinee.2017.07.009
Reference: SPINEE 57393

To appear in: *The Spine Journal*

Received date: 17-3-2017
Revised date: 22-6-2017
Accepted date: 6-7-2017

Please cite this article as: Xin Rong, Beiyu Wang, Chen Ding, Yuxiao Deng, Hua Chen, Yang Meng, Weijie Yan, Hao Liu, The biomechanical impact of the facet tropism on the intervertebral disc and facet joints in the cervical spine, *The Spine Journal* (2017), http://dx.doi.org/doi: 10.1016/j.spinee.2017.07.009.

The biomechanical impact of the facet tropism on the intervertebral disc and facet joints in the cervical spine

Xin Rong, M.D.[a], Beiyu Wang M.D. [a], Chen Ding M.D. [a], Yuxiao Deng, M.D. [a], Hua Chen, M.D. [a], Yang Meng, M.D. [a], Weijie Yan M.S.M.T.[b], Hao Liu, M.D., Ph.D. [a]

[a] Department of Orthopedics, West China Hospital, Sichuan University, Chengdu, Sichuan Province, China, 610041.

[b] Department of Radiology, West China Hospital, Sichuan University, Chengdu, Sichuan Province, China, 610041.

Correspondence to: Hao Liu, M.D. PhD., Department of Orthopedic Surgery, West China Hospital, No. 37, Guo Xue Xiang, Chengdu, Sichuan Province, China, 610041.

Fax number: 86-28-85423438

Telephone Number: 86-28-85422430

E-mail: liuhao6304@163.com

Abstract

BACKGROUND CONTEXT: The facet tropism is defined as the angular difference between the left and right facet orientation. The facet tropism was suggested to be associated with the disc degeneration and facet degeneration in the lumbar spine. However, little is known about the relationship between the facet tropism and pathological changes in the cervical spine and the mechanism behind.

PURPOSE: This study was conducted to investigate the biomechanical impact of the facet tropism on the intervertebral disc and facet joints.

STUDY DESIGN: A finite element analysis study.

METHODS: The CT scans of a 28 year-old male volunteer was used to construct the