## Author's Accepted Manuscript

The Rib Cage Stiffens the Thoracic Spine in a Cadaveric Model with Body Weight Load under Dynamic Moments

Erin M. Mannen, Elizabeth A. Friis, Hadley L. Sis, Benjamin M. Wong, Eileen S. Cadel, Dennis E. Anderson



 PII:
 S1751-6161(18)30730-6

 DOI:
 https://doi.org/10.1016/j.jmbbm.2018.05.019

 Reference:
 JMBBM2796

To appear in: Journal of the Mechanical Behavior of Biomedical Materials

Received date: 13 December 2017 Revised date: 12 February 2018 Accepted date: 9 May 2018

Cite this article as: Erin M. Mannen, Elizabeth A. Friis, Hadley L. Sis, Benjamin M. Wong, Eileen S. Cadel and Dennis E. Anderson, The Rib Cage Stiffens the Thoracic Spine in a Cadaveric Model with Body Weight Load under Dynamic Moments, *Journal of the Mechanical Behavior of Biomedical Materials*, https://doi.org/10.1016/j.jmbbm.2018.05.019

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

### The Rib Cage Stiffens the Thoracic Spine in a Cadaveric Model with Body Weight Load under

#### **Dynamic Moments**

Erin M. Mannen, Ph.D.<sup>a1</sup>, Elizabeth A. Friis, Ph.D.<sup>b\*</sup>, Hadley L. Sis, M.S.<sup>c</sup>, Benjamin M. Wong, M.S.<sup>d</sup>, Eileen S. Cadel, M.S.<sup>e</sup>, Dennis E. Anderson, Ph.D.<sup>f</sup>

<sup>a</sup>The University of Kansas, Department of Mechanical Engineering, Bioengineering Program, 1530 W. 15<sup>th</sup> St., Lawrence, KS 66045

<sup>b</sup>The University of Kansas, Department of Mechanical Engineering, Bioengineering Program, 1530 W. 15<sup>th</sup> St., Lawrence, KS 66045

<sup>c</sup>The University of Kansas, Bioengineering Program, 1530 W. 15<sup>th</sup> St., Lawrence, KS 66045 <sup>d</sup>The University of Kansas, Bioengineering Program, 1530 W. 15<sup>th</sup> St., Lawrence, KS 66045 <sup>e</sup>The University of Kansas, Bioengineering Program, 1530 W. 15<sup>th</sup> St., Lawrence, KS 66045 <sup>f</sup>Beth Israel Deaconess Medical Center, Center for Advanced Orthopaedic Studies, Harvard Medical School, Department of Orthopaedic Surgery, 330 Brookline Avenue, RN 115, Boston, MA 02215

erinmannen@gmail.com emannen@uams.edu lfriis@ku.edu hadley.sis04@gmail.com bwong2010@gmail.com ecadel@ku.edu danders7@bidmc.harvard.edu

\*Corresponding Author: EA Friis, The University of Kansas, Lawrence, KS USA, 1530 W 15th St., Learned Hall Room 3138, Lawrence, KS 66045, Phone: (785) 864-2104, Fax: (785) 864-5254.

#### ABSTRACT

The thoracic spine presents a challenge for biomechanical testing. With more segments than the lumbar and cervical regions and the integration with the rib cage, experimental approaches to evaluate the mechanical behavior of cadaveric thoracic spines have varied widely. Some researchers are now including the rib cage intact during testing, and some are incorporating

<sup>&</sup>lt;sup>1</sup>**Current Affiliation**: The University of Arkansas for Medical Sciences, Department of Orthopaedic Surgery 4301 W. Markham St. #531, Little Rock, AR 72205.

Download English Version:

# https://daneshyari.com/en/article/7207019

Download Persian Version:

https://daneshyari.com/article/7207019

Daneshyari.com