45th International Workshop on Human Subjects for Biomechanical Research

National Highway Traffic Safety Administration
Rodney W. Rudd, Chair
Mills House Wyndham Grand Hotel – Charleston, SC
Sunday, November 12, 2017

PROGRAM

7:30-8:55 REGISTRATION

8:55-9:00 OPENING REMARKS

9:00-10:20 SESSION I

Parametric Analysis and Optimization of Variables Affecting the Brain Injury Criterion BrIC in Various Crash Scenarios
Vikas Hasija¹, E. G. Takhounts², M. J. Craig²
¹ Bowhead Logistics Solutions, ² National Highway Traffic Safety Administration

“BrIC Overpredicts the Field Brain Injury Risk” – Myth or Reality?
Erik G. Takhounts¹, V. Hasija², M. J. Craig¹
¹ National Highway Traffic Safety Administration, ² Bowhead Logistics Solutions

Preliminary Tests for the Development of Brain Response Corridors Using High-Speed Biplane X-ray
Allison J. Guettler¹, C. Untaroiu¹, R. Ramachandra², W. N. Hardy¹
¹ Virginia Tech, ² The Ohio State University

Simplified Human Body Model Performance Compared to Multidirectional Human Volunteer Testing
James P. Gaewsky¹,², D. A. Jones¹,², B. Koya¹,², X. Ye¹,², K. P. McNamara¹,², M. Z. Saffarzadeh¹,², A. S. Weaver¹,², F. S. Gayzik¹,², J. D. Stitzel¹,²
¹ Virginia Tech – Wake Forest School Center for Injury Biomechanics, ² Wake Forest School of Medicine

10:20-10:40 BREAK

10:40-12:00 SESSION II

Quantifying the Biomechanical Response of the Human Brain During Head Rotational Loading
Ahmed Alshareef, S. Giudice, J. Forman, M. B. Panzer
Center for Applied Biomechanics, University of Virginia

The Impact Responses of Non-Certified Motorcycle Helmets: Cheaper and Better?
Duke University

Parametric Studies on Effects of Three-Point Seatbelt on Lower Spine Forces in Frontal Crashes
Prasannaah Hadagali¹, M. W. J. Arun¹, F. A. Pintar¹, N. Yoganandan¹, R. Rudd²
¹ Department of Neurosurgery, Medical College of Wisconsin, ² National Highway Traffic Safety Administration

Aging Alters Human Rib Cage Behavior under Dynamic Loading
Eunjoo Hwang, S. Holcombe, S. Ejima, C. Kohoyda-Inglis, J. Sullivan, K. Cunningham, S. Wang
International Center for Automotive Medicine/Morphomic Analysis Group, University of Michigan Health System

12:00-1:30 LUNCH
SESSION III

Low-Uncertainty Estimates of Single Head Impact Doses in Athletes
Sergey Samorezov¹, A. Bartsch², A. Shah³, B. Stemper¹
¹ Cleveland Clinic, ² Prevent Biometrics, ³ Medical College of Wisconsin

A Three-Dimensional Immersive Environment to Analyze Biomechanical Data from Small Female PMHS Sled Tests in Oblique Frontal Impacts
John Humm¹, N. Yoganandan¹, F. Pintar², C. Larkee², P. Balasubramanian², J. LaDisa²
¹ Department of Neurosurgery, Medical College of Wisconsin, ² Department of Biomedical Engineering, Marquette University and Medical College of Wisconsin

THOR 5th Dummy FE Model Development and 3-D Printed Rib Update
Fuchun Zhu, C. S. Shah, M. Beebe
Humanetics Innovative Solutions, Inc.

Biofidelity Evaluation of THOR 5th Percentile Female ATD
Jerry Wang¹, J. Below¹, B. Loeber¹, B. Beahlen¹, D. Guck¹, J. Stephens¹, E. Lee²
¹ Humanetics Innovative Solutions, Inc., ² National Highway Traffic Safety Administration

SESSION IV

Investigation of Pedestrian Kinematics and Injury Responses with Respect to Pedestrian Anthropometry and Vehicular Shape
Wansoo Pak¹, Y. Meng¹, B. Guleyupoglu², J. Schap², B. Koya², S. Gayzik², C. Untaroiu¹
¹ Virginia Tech, ² Wake Forest University School of Medicine

Characterization of Human Motion in On-Road Pre-Crash Vehicle Maneuvers
Valentina Graci¹, E. Douglas¹, T. Seacrist¹, J. Kerrigan², J. Bing³, J. Bolte IV³, R. Sherony³, J. Hallman³, K. Arbogast¹
¹ Center for Injury Research and Prevention, Children’s Hospital of Philadelphia, ² Center for Applied Biomechanics, University of Virginia, ³ Injury Biomechanics Research Center, The Ohio State University, ⁴ Collaborative Safety Research Center, Toyota Motor North America

The Effect of Helmet Mass and Motion on Concussion Risk in Youth Football Players
David Stark, Y-S Kang, J. H. Bolte IV
Injury Biomechanics Research Center, The Ohio State University

Comparing Human Femur Geometries between Populations in the United States and China
Wenjing Du¹,2, J. Zhang², J. Hu¹
¹ University of Michigan Transportation Research Institute, ² State Key Laboratory of Automotive Safety and Energy, Tsinghua University

CONCLUDING REMARKS