49th NHTSA Workshop on Human Subjects for Biomechanical Research

National Highway Traffic Safety Administration **Rodney W. Rudd, Ph.D., Chair**

GoToWebinar 535-639-075 Tuesday and Wednesday, October 26 and 27, 2021

PROGRAM

TUESDAY, OCTOBER 26 – DAY 1 **ALL TIMES EDT, UTC -4**

9:00-9:10 **OPENING REMARKS** – DR. STEVEN CLIFF, ACTING ADMINISTRATOR, NHTSA

9:10-10:30 **SESSION I**

Compressive Material Properties of Human Costal Cartilage
Hannah Nowinski[1], D. Albert[1], A. Agnew[2], A. Kemper[1]
[1] Virginia Tech-Wake Forest University, Center for Injury Biomechanics, [2] Injury Biomechanics Research Center, The Ohio State University

Characterization of Subcutaneous Pelvic Adipose Tissue for the Enhancement of Human Surrogate Models
Austin Moore[1,2], S. Efobi[1,2], J. Aira[1,2], L. Lenchik[1], F. Hsu[1], A. Weaver[1,2], F. Gayzik[1,2]
[1] Wake Forest School of Medicine, [2] Virginia Tech-Wake Forest School of Biomedical Engineering and Sciences

Development of Injury Criteria of Liver for THUMS v6.1 – Challenge Toward Liver Injury Mitigation
Ning Zhang[1], Z. Huo[1], S. Ohara[2], H. Ida[3], M. Aoki[3]
[1] Toyoda Gosei North America, [2] TGR Technical Center, [3] Toyoda Gosei

Quantitative Evaluation of Gravity Settling Methods for Virtual Assessment in Human Body Models
B. Wade von Kleeck III[1,2], J. Caffrey[1,2], C. Costa[1,2], J. Hallman[3], A Weaver[1,2], F. Gayzik[1,2]
[1] Wake Forest School of Medicine, [2] Virginia Tech-Wake Forest School Center for Injury Biomechanics, [3] Toyota Motor Engineering and Manufacturing North America

10:30-10:50 **BREAK**

10:50-12:10 **SESSION II**

The Effect of an Acoustic Startling Pre-stimulus Warning on Forward-leaning Vehicle Occupants in Pre-crash Scenarios
Valentina Graci[1,2], M. Griffith[1], A. Torres[1], T. Seacrist[1], D. Brase[3], E. Mishra[3], B. Pipkorn[3], N. Lubbe[3], K. Arbogast[1,4]
[1] Center for Injury Research and Prevention, Children's Hospital of Philadelphia, [2] School of Biomedical Engineering, Science and Health System, Drexel University, [3] Autoliv Research, [4] Perelman School of Medicine, University of Pennsylvania

Pre-impact Bracing Variability in 5th Percentile Female and 50th Percentile Male Volunteers Prior to Low-speed Frontal and Frontal-oblique Sled Tests
Hana Chan, D. Albert, F. Gayzik, A. Kemper
Virginia Tech-Wake Forest University Center for Injury Biomechanics

Evaluation of the Biofidelity of Hybrid III 50th Male and THOR-50M in Reclined Frontal Impact Sled Tests
Jee Soo Shin, J. Donlon, R. Richardson, B. Gepner, J. Forman, J. Kerrigan
Center for Applied Biomechanics, University of Virginia

THOR-AV Biomechanical Responses in Sled Test Conditions
Jerry Wang
Humanetics Innovative Solutions, Inc.

12:10 **ADJOURN DAY 1**

9:00-10:20   <u>SESSION III</u>

Comparison of Small Female Thoracic Responses to Scaled Response Corridors in a Frontal Hub Impact

Yun-Seok Kang[1], A. Bendig[1], J. Stammen[2], K. Moorhouse[2], J. Bolte[1], A. Agnew[1]
[1] Injury Biomechanics Research Center, The Ohio State University, [2] National Highway Traffic Safety Administration

Thoracic Response and Injury Analysis of Small, Elderly Female PMHS in Simulated Near-Side Crashes

John Bolte IV[1], B. Shurtz[1], B. Pipkorn[2], H. Rhule[3], K. Moorhouse[3], A. Agnew[1], Y. Kang[1]
[1] Injury Biomechanics Research Center, The Ohio State University, [2] Autoliv Research, [3] National Highway Traffic Safety Administration

Thoracic Injury Criteria Considerations for the THOR 5th ATD
Ellen Lee, M. Craig
National Highway Traffic Safety Administration

Development of FE Models for the Advanced Small Female Dummies with Improved Biofidelity
Fuchun Zhu, C. Kleessen, C. Shah
Humanetics Innovative Solutions, Inc.

10:20-10:40   BREAK

10:40-12:20   <u>SESSION IV</u>

Reconstructing and Assessing Confidence of Finite Element Simulations of CIREN Crashes
C. Costa, Karan Devane, F. Gayzik, J. Stitzel, A. Weaver
Wake Forest School of Medicine

Comparison of Kinematic Behavior and Injury Measures of Male THOR and GHBMC M50-O v6.0 Model in Oblique Far-Side Sled Tests
Jay Zhao, S. Lee
Joyson Safety Systems Inc.

Understanding the Pre-impact Conditions of a Headfirst Impact in a Motor Vehicle Rollover: Part I of a Human Subject Experiment
Loay Al-Salehi[1], G. Siegmund[2], P. Cripton[1]
[1] School of Biomedical Engineering, University of British Columbia, [2] MEA Forensic Engineers and Scientists

Validation of Rotational Head Kinematics in IIHS Rear-end Impact Tests Determined by Video Analysis
Wade A. Baker, J.M. Clark, J.R. Wheeler, J.B. Wheeler
Vector Scientific, Inc.

Rapidly and Accurately Estimate Brain Strain and Strain Rate Across Impact Types with Transfer Learning
Xianghao Zhan[1], Y. Liu[1], N. Cecchi[1], O. Gevaert[2], M. Zeineh[3], G. Grant[4], D. Camarillo[1]
[1] Department of Bioengineering, Stanford University, [2] Department of Biomedical Data Science, Stanford University, [3] Department of Radiology, Stanford University, [4] Department of Neurosurgery, Stanford University

12:20   ADJOURN DAY 2 AND CONCLUDING REMARKS

Note to attendees: Please use the Questions section of your GoToWebinar control panel to submit questions. Workshop organizers will relay the questions to the speaker during the discussion phase of each presentation.

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