Richard W. Kent, Ph.D.

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Center for Applied Biomechanics
University of Virginia
4040 Lewis & Clark Drive
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Principal Consultant and co-Founder
Biomechanics Consulting and Research (Biocore), LLC
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https://scholar.google.com/citations?user=5T1IsfwAAAAJ&hl=en

Research and Professional Activities

Professional Experience

Professor — 2010-Present
Department of Mechanical and Aerospace Engineering
University of Virginia

Professor — 2010-Present
Department of Biomedical Engineering (by courtesy)
University of Virginia

Clinical Professor — 2010-Present
Department of Emergency Medicine (by courtesy)
University of Virginia

Principle Consultant and co-Founder — 2003-Present
Biomechanics Consulting and Research (Biocore), LLC

Founding Deputy Director — 2008-2017
Center for Applied Biomechanics
University of Virginia

Associate Professor — 2008-2010
Department of Mechanical and Aerospace Engineering
University of Virginia

Associate Professor Department of Biomedical Engineering (by courtesy) University of Virginia	2008-2010
Clinical Associate Professor Department of Emergency Medicine (by courtesy) University of Virginia	2008-2010
Assistant Professor Department of Mechanical and Aerospace Engineering University of Virginia	2005-2008
Assistant Professor Department of Biomedical Engineering (by courtesy) University of Virginia	2005-2008
Clinical Assistant Professor Department of Emergency Medicine (by courtesy) University of Virginia	2003-2008
Research Assistant Professor Department of Mechanical and Aerospace Engineering University of Virginia	2002-2005
Research Assistant Center for Applied Biomechanics Department of Mechanical and Aerospace Engineering University of Virginia	1999-2002
Engineer (Partner) Collision Safety Engineering, LC	1997-1999
Engineer (Staff) Collision Safety Engineering, Inc.	1994-1997
Engineering Technician Collision Safety Engineering, Inc.	1991-1994

Education

PhD, Mechanical and Aerospace Engineering — January 2002
University of Virginia

MS, Mechanical Engineering — June 1997
University of Utah

BS, Mechanical Engineering — June 1994
University of Utah

Research Interests

Injury biomechanics, esp. thoracic trauma and tolerance changes associated with aging and pediatric development

Characterization of biological materials and structures

Sports-related injury risk/performance trade-offs, esp. related to lower extremity injury and shoe/turf interaction mechanics, body padding, and concussion risk mitigation

Restraint performance and optimization for impact mitigation

Automobile safety system design and assessment

Occupant kinematics and injury mechanisms in automobile crashes

Experimental design and development of test and analysis methods, including instrumentation for measuring human kinematics and kinetics.

Substantial Honors and Awards

Thomas E. Hutchinson Faculty Award Finalist — 2014
Trigon Engineering Society
UVa student society award that recognizes "outreach to students, enthusiastic lectures, obvious love of teaching, and contribution to the Engineering School"

Award of Merit — 2013
Highest career recognition award given by the Association for the Advancement of Automotive Medicine (AAAM). At most one awarded per year worldwide.

Stapp Advisory Committee — 2009-Present

Stapp Student Paper Award (Advisor) — 2009, 2010

Fellow, Society of Automotive Engineers — 2008

Fellow, Assoc. for the Advancement of Automotive Medicine 2008

Fulbright Senior Specialist Roster 2008-2013
J. William Fulbright Foreign Scholarship Board (FSB), the Bureau of Education and Cultural Affairs of the U.S. Department of State (ECA), and the Council for International Exchange of Scholars (CIES)

SAE Ralph R. Teetor Educational Award 2008
Recognizes and honors younger university educators who are "successfully preparing engineers to meet the challenges that face contemporary society"

John Paul Stapp Award 2006, 2009
One awarded annually to the paper that "makes the most significant contribution to the field of impact biomechanics."

SAE Member Service Award 2007

L. Withrow Distinguished Speaker Award 2007
One of 10 awarded annually by the Society of Automotive Engineers (SAE)

A.J. Merkin Service Award 2006
One per year by the Association for the Advancement of Automotive Medicine (AAAM)

Excellent Technical Presentation Award 2006, 2011
Japanese Society of Automotive Engineers

Excellence in Diversity Fellow 2005-2006
University of Virginia

Margaret H. Hines Award 2005
The Ohio State University

Best Scientific Paper Award 2002, 2005, 2008
One awarded per year by AAAM

TR100 2004
Technology Review's "list of 100 young people whose contributions to emerging technologies are poised to profoundly influence our world."

Elaine Wodzin Young Achiever Award 2003
One awarded per year by AAAM

Best Young Researcher Award 2001
One awarded per year by the International Research Council on the Biomechanics of Impact (IRCOBI) to a researcher under age 35.

Best Student Paper, 1st Place 2001
Stapp Car Crash Journal

GSRP Fellowship 2000
NASA - Langley Research Center

Aerospace Graduate Research Fellowship 2000
Virginia Space Grant Consortium

Excellence in Oral Presentation Award 2001- 2004, 2006, 2010
Society of Automotive Engineers

Society of Automotive Engineers - Doctoral Scholar 1999-2001

Dean's Fellowship 1999
University of Virginia

NIOSH Traineeship 1996-97
University of Utah

Teaching – University of Virginia

MAE 4501 Modeling of Human Body Kinematics

MAE 428 Motion Biomechanics

MAE 492 Injury Biomechanics

MAE 692 Special Topics: Impact Biomechanics

MAE 492/BIOM 496 Orthopedic Biomechanics (Undergraduate)

MAE 692/BIOM 695 Orthopedic Biomechanics (Graduate)

MAE/AM/APMA/CE 602 Continuum Mechanics with Applications

MAE 231 Strength of Materials

MAE 692 Biostatistics with Application to Biomechanics

MAE 4990 Professional Development in Mechanical and Aerospace Engineering

Lecturer and organizer, Didactics lecture series for residents, Department of Emergency Medicine, School of Medicine

Lecturer, University of Virginia School of Medicine Grand Rounds Lecture Series

Lecturer, INST 203 Research in Emergency Medicine, School of Medicine

Lecturer, USEM 171/SOC 230 The American Health Care System

Teaching – Extramural

Founding Organizer and General Chair, HeadHealthTECH Symposium, National Football League. Washington, DC, November 2016.

International Course on Transportation Planning and Safety – Indian Institute of Technology (IIT), Delhi, December 2011.

The Biomechanics of High-Impact Injuries – National Transportation Safety Board (NTSB) Academy, April 2007.

Injury Biomechanics – sponsored and accredited by the Universdad de Navarra, Pamplona, Spain April 2007, 2009.

Biomechanics in Motor Vehicle Crashes Course – sponsored and accredited by the Universdad de Navarra, Pamplona, Spain April 2004.

Biomechanics of Trauma Course – AAAM

Airbag Design and Performance Toptec - SAE Professional Development Program

High Speed Rear Impact Toptec - SAE Professional Development Program

Side Impact Design Considerations Toptec - SAE Professional Development Program

Multidisciplinary Crash Investigation Course – AAAM

Accident Reconstruction: State of the Art Toptec - SAE Professional Dev. Program

Advances in Side Impact Test Methodologies and Occupant Protection Toptec – SAE Professional Development

Graduate Student Advising

PhD Graduate Students

Sang-Hyun Lee, PhD qualifier exam passed October 2005, dissertation proposal defended October 2006, Ph.D. MAE, 2007. Dissertation title: "Experimental and Numerical Study of Fluid-Structure Interaction in an in-vitro Human Aorta Model for Traumatic Rupture Conditions"

Jason Lee Forman, PhD qualifier exam passed November 2006, dissertation proposal defended 2007, PhD MAE, 2009. Dissertation title: "Deformation of the Ribcage under Anterior Load - Experimental and Computational Observations on the Role of Structural Coupling via the Costal Cartilage"

Anthony Ghing Wah Lau, PhD qualifier exam passed 2007, PhD BME 2011, Dissertation title "Development of a Microstructural Homogenization Model for Calcifying Cartilage using the Generalized Method of Cells"

Francisco J. Lopez-Valdes, PhD qualifier exam passed 2008, PhD MAE 2013, dissertation title "Mechanics of the Pediatric Thoracic Spine and its Role in the Kinematics of the Head in Automotive Frontal Impacts".

John Paul Donlon, PhD MAE expected 2020.

PhD committee service

Name	Role	Thesis Title	Graduation Date
R. Rudd	Committee	Injury Tolerance of the Human Ankle in Impact-Induced Dorsiflexion	January 2005
E. Charpail	Jury	Analyse du Comportement Mécanique des Côtes en Dynamique. (Ecole Nationale Supérieure d'Arts et Métiers, ENSAM, Paris)	October 2006
S. Lee	Advisor	Experimental and Numerical Study of Fluid-Structure Interaction in an in-vitro Human Aorta Model for Traumatic Rupture Conditions	May 2007
S. Lucas	Committee	A Microstructural Viscoelastic Ligament Failure Model.	December 2007
J. Kerrigan	Committee (Chair)	A Computationally Efficient Mathematical Model of the Human Pedestrian Lower Extremity	December 2007
F. Törnvall	Opponent	A New Shoulder for the THOR Dummy Intended for Oblique Collisions (Chalmers University of Technology, Göteborg, Sweden)	April 2008
L. Kanner	Committee	Mechanical Behavior of Strain-Stiffening Rubber-like Nonlinearly Elastic Materials	May 2008
D. Bose	Committee (chair)	A Methodology to Characterize and Estimate Real-time Occupant Response during Frontal Collisions	August 2008
J. Tian	Proposal Committee	Modeling and Analysis of Neuronal Circuits for Locomotion with Sensory Feedback	December 2008
D. B. Stringer	Committee	Geared Rotor Dynamic Methodologies for Advancing Prognostic Modeling Capabilities in Rotary-Wing Transmission Systems	December 2008
T. Biss	Committee	CPG Control of Tensegrity Structures for Biomimetric Applications	May 2009
J. Forman	Advisor	Deformation of the Ribcage under Anterior Load - Experimental and Computational Observations on the Role of Structural Coupling via the Costal Cartilage	May 2009

B. Sandoz	Jury	Geometric and Mechanical Characterization of the Pediatric Trunk. (ParisTech, Paris)	January 2010
A. Lau	Advisor	Development of a Microstructural Homogenization Model for Calcifying Cartilage using the Generalized Method of Cells	May 2011
A. Younan	Committee	Elastohydrodynamic Lubrication in Rolling Element Bearing: Static and Dynamic Properties	May 2011
J. Chaudhry	Committee	3-D Finite Element Analysis of Rotors in Gas Turbines, Steam Turbines and Axial Pumps including Blade Vibrations	May 2011
B. Sharafi	Committee	Micromechanical Modeling of Skeletal Muscle: Insights in Structure and Function at the Fiber and Fascicle Levels	May 2011
M. Wagner	Committee (Chair)	Model Reduction Methods for Rotor Dynamic Analysis: An Exploration, Comparison, and Metrics for Model Reduction of Rotor Dynamic Systems	May 2011
K. Rafaels	Committee	Blast Brain Injury Risk	Dec. 2010
N. Fiorentino	Committee	Insights into Acute Muscle Strain Injury Obtained With In Vivo Imaging and Finite Element Modeling	May 2013
C. Douglas	Examiner	Modelling [sic] Occupants in Far-Side Impact Crashes (Monash University)	Dec. 2011
J. Cao	Committee (Chair)	Transient Analysis of Flexible Rotors with Nonlinear Bearings, Dampers and External Forces	May 2012
F. He	Committee (Chair)	Forced Responses and Stability of Flexible Rotor-Bearing Systems with Squeeze Film Dampers	Aug. 2013
D. Poulard	Jury	Identification of the influence of main geometrical parameters on the thorax mechanical response thoracic injury risk on vulnerable individuals with a geometrical personalized FE model (Universite Claude Bernard Lyon)	Dec. 2012
F. Lopez-Valdes	Advisor	Mechanics of the Pediatric Thoracic Spine and its Role in the Kinematics of the Head in Automotive Frontal Impacts	May 2013
A. Hemmasizadeh	Committee	Characterization of heterogeneous material properties of aorta using nanoindentation (Temple University)	December 2013

G. Handsfield	Committee (Proposal)	Predictions of Injury and Prescriptions for Recovery of the Hamstrings based on MRI and Mechanical Modeling	June 2014
A. Malcom	Committee	Hybrid glass-epoxy corrugated composite cellular structure for use in blast mitigation	May 2014
W. Tu	Committee	CZM-based finite-volume homogenization and optimization of periodic composites.	May 2016
S. Boruah	Committee (Chair)	A viscoelastic model for high strain rate loading of the human calvarium	June 2016
Y. Wang	Committee (Chair)	Exploring the impact of skin mechanical properties on neural mechanotransduction of tactile percepts	August 2016

MS and ME Graduate Students

John Paul Donlon, MS MAE May 2019, thesis title TBD.

Alex Mait, MS MAE August 2017, thesis title "Syndesmotic Ankle Sprains in Large Males"

Adwait Mane, MS MAE May 2016, thesis title "Representing sub-failure quasi-static ligament mechanics and bone kinematics in a human ankle finite element model"

Sabrina Lau, MS MAE August 2013, thesis title "Assessment of *Macropus Giganteus* as a Biomechanical Model of the Pediatric Thorax"

Rebecca Frimenko, MS MAE May 2013, thesis title "Injury Mechanisms and Threshold of Acute First Metatarsophalangeal Joint Sprains"

John Lamp, MS MAE May 2011, thesis title "Biofidelity Assessment of an Abdominal Insert for the Hybrid III 6-Year Old"

William Eberhardt, MS MAE January 2010, thesis title "Experimental Study of the Flow in a Synthetic Aorta for Traumatic Rupture Conditions"

Matthew Kindig, MS MAE October 2009, thesis title "Tolerance to Failure and Geometric Influences on the Stiffness of Human Ribs under Anterior-posterior Loading"

Jarett Michaelson, MS MAE 2008, thesis title "An Assessment of the Effectiveness of Pre-tensioning and Load Limiting in the Rear Seat"

Yasmina Abdelilah, MS MAE 2007, thesis title "Comparison of Whole-Body Kinematics of a PMHS and the Hybrid III Six Year-Old Dummy in a Simulated Frontal Crash"

Jason Mattice, MS MAE 2006, thesis title "Age-Dependent Changes in the Viscoelastic Response of the Porcine Kidney Parenchyma Using Spherical Indentation and Finite Element Analysis"

Tahsin Ali, MS MAE 2005, thesis title "The Aging Human Thorax: Structural and Material Characterization"

Brian Overby, ME MAE 2003

Stephen Stacey, ME MAE 2006.

MS committee service

Name	Role	Thesis Title	Graduation Date
M. Davis	Committee (Chair)	Facial Fracture and Eye Injury Tolerance from Night Visions Goggle Loading	January 2004
J. Benjamin Folk	Committee (Chair)	Development of a Test Methodology to Evaluate Mine Protective Footwear	January 2004
S. Lucas	Committee (Chair)	Viscoelastic Characterization of Spinal Ligaments	May 2004
L. Donnellan	Committee (Chair)	Injury Criterion for US Army Helicopter Pilots with Head Supported Mass	August 2004
T. Ali	Advisor	The Aging Human Thorax: Structural and Material Characterization	May 2005
R. Nordhagen	Committee	Characterization of Vehicle Crush Response in Narrow-Object Rear Impacts	June 2005
C. Planchak	Committee	Temperature Dependence of Porcine Lumbar Spinal Ligaments	May 2006
K. Meyerhoff	Committee	Using *Drosophila melanogaster* (fruit fly) larvae as a model for blast lung injury	May 2006
J. Mattice	Advisor	Age-Dependent Changes in the Viscoelastic Response of the Porcine Kidney Parenchyma Using Spherical Indentation and Finite Element Analysis	May 2006
A. Ziemba	Committee	Evaluation of Injury Specification Strategies for the Assessment of Spinal Injury from the Repeated Impact Environment of High Speed Planing Boats	May 2006
C. Kam	Committee (Chair)	Three-dimensional Strain Assessment of Pedestrian Lower Extremities During a Vehicle Collision	January 2007

Y. Abdelilah	Advisor	Comparison of Whole-Body Kinematics of a PMHS and the Hybrid III Six Year-Old Dummy in a Simulated Frontal Crash	May 2007
R. Kendall	Committee (Chair)	Parametric Evaluation of Dummy Response Using Rear-Facing and Forward-Facing Child Restraints	August 2007
D. Genovese	Committee (Chair)	Development of an Injury Criterion for the Human Femoral Shaft	December 2007
J. Michaelson	Advisor	An Assessment of the Effectiveness of Pre-tensioning and Load Limiting in the Rear Seat	May 2008
M. Kindig	Advisor	Tolerance to Failure and Geometric Influences on the Stiffness of Human Ribs under Anterior-posterior Loading	October 2009
W. Eberhardt	Co-Advisor	Experimental Study of the Flow in a Synthetic Aorta for Traumatic Rupture Conditions	January 2010
M. Rehorn	Committee	Finite Element Modeling of Strain Injuries in the Hamstrings	May 2010
B. Nichols	Committee	Experimental Study and Optimization of an Eight Foot Vertical Axis Wind Turbine	December 2010
J. Lamp	Advisor	Biofidelity Assessment of an Abdominal Insert for the Hybrid III 6-Year Old	May 2011
Y. Wang	Committee	Impact of Skin Hyper- and Visco-elastic Properties on the Neural Mechanotransduction for the Slowly Adapting Type I Afferent	November 2012
J. Lockerby	Committee (Chair)	Roof Deformation in Vehicle Rollover: The Case for Including an Energy Criterion in Vehicle Crashworthiness Evaluation	December 2013
R. Frimenko	Advisor	Injury Mechanisms and Threshold of Acute First Metatarsophalangeal Joint Sprains	May 2013
J. Foster	Committee (Chair)	Injury Mechanisms and Priorities for Cervical Spine Trauma Mitigation in Rollover Crashes: The Development and Analysis of Experimental Testing of Axial Compressive Cervical Spine Impacts	May 2013
S. Lau	Advisor	Assessment of *Macropus Giganteus* as a Biomechanical Model of the Pediatric Thorax	August 2013
X. Ye	Committee (Chair)	Driver Lower Extremity Response and Injury with Knee Airbag Deployment	August 2014
J. Seppi	Committee (Chair)	Repeatability Study of the Dynamic Rollover Test System (DRoTS) Using an Objective Rating Method	May 2015
A. Mane	Advisor	Representing sub-failure quasi-static ligament mechanics and bone kinematics in a human ankle finite element model	May 2016

A. Mait	Advisor	Syndesmotic ankle sprains in large males	August 2017
J. Donlon	Advisor	TBD	May 2019

Advisor for approximately 60 undergraduate theses.
Non-thesis academic advisor for approximately 300 undergraduates.

Visitors, Post-Doctoral Fellows, Research Faculty, and Research Staff Supervised

Visitors

Daisuke Murakami, Visiting Research Scientist (2005-2006), PhD Mechanical Engineering.

Takahiko Sugiyama, Visiting Researcher (2009), PhD Mechanical Engineering

Research Scientists

Jason Forman, Senior Scientist (2012-Present), PhD Mechanical and Aerospace Engineering

William Brent Lievers, Research Scientist (2009-2013), PhD Mechanical Engineering. Left for faculty position at Laurentian University.

Michelle Oyen, Research Scientist (2005-2006), PhD Biophysical Sciences and Medical Physics. Left for lectureship at Cambridge.

Zuoping Li, Research Scientist (2008-2012) PhD Mechanical Engineering. Left for a position as Research Engineer at Humanetics Innovative Solutions Inc.

Damien Subit, Senior Scientist (2009-2014) PhD Mechanical Engineering. Left for position as Marie Curie fellow at Laboratoire de Biomecanique at the Paris Institute of Technology.

Patrick Riley, Research Scientist (2009-Present) PhD Mechanical Engineering

Postdoctoral Fellows

Bronislaw Gepner, Research Associate (2016-Present), PhD Civil Engineering.

Bingbing Nie, Research Associate (2014-2017), PhD Mechanical Engineering, Placed in a tenure-track faculty position at Tsinghua University.

David Poulard, Research Associate (2013-2017), PhD Mechanical Engineering, Placed in an industrial position.

Damien Subit, Research Associate (2005-2009) PhD Mechanical Engineering, Placed in a a faculty position at ParisTech.

Basem Henary, Research Associate (2003-2005), MD. Placed in a research position at the University of Maryland.

Sergey Purtsesov, Research Associate (2005-2007) PhD Mechanical Engineering

Sonia Duprey, Research Associate (2007-present) PhD Mechanical Engineering. Placed in a lectureship position at Laboratoire de Biomécanique et Mécanique des Chocs, Lyon.

Jason Forman, Research Associate (2009-2010) PhD Mechanical and Aerospace Engineering. Placed in a Profesor Asociado position at the Universidad de Navarra, Pamplona, Spain.

Books and Refereed Publications

Books Edited and Book Chapters (advised student, **supervised post-doctoral scholar)

1. Kent, R. and Forman, J. (2015) Restraint System Biomechanics; in Accidental Injury – Biomechanics and Prevention, Third Edition, N. Yoganandan (ed.). Springer Science+Business Media, New York. DOI 10.1007/978-1-4939-1732-7.
2. Kent, R., Crandall, J., and Bose, D. (2012) Injury Biomechanics; in Orthopaedic Biomechanics, B. Winkelstein (ed.). CRC/Taylor and Francis. ISBN: 978-1-43-986093-9.
3. Kent, R. and Bass, C. (2012) Experimentación con Animales (English: Experimentation with animals); in Fundamentos de Biomecánica en las Lesiones por Accidente de Tráfico. (English: Fundamentals of Biomechanics and Road Traffic Injuries), Second Edition, C. Arregui, J. Luzon, M. Segui-Gomez (eds.). Editorial ETRASA 2012. ISBN: 978-84-92625-40-6.
4. Lopez-Valdes, F. and Kent, R., (2012) Biomecánica de las Lesiones Pediátricas (English: Pediatric Biomechanics); in Fundamentos de Biomecánica en las Lesiones por Accidente de Tráfico. (English: Fundamentals of Biomechanics and Road Traffic Injuries), Second Edition, C. Arregui, J. Luzon, M. Segui-Gomez (eds.). Editorial ETRASA 2012. ISBN: 978-84-92625-40-6.
5. Kent, R. (2012) A Propósito de una Lesión y su Correspondiente Análisis Biomecánico (English: Injury biomechanics and its Application to the Study of a Specific Injury); in Fundamentos de Biomecánica en las Lesiones por Accidente de Tráfico. (English: Fundamentals of Biomechanics and Road Traffic Injuries), Second Edition, C. Arregui, J. Luzon, M. Segui-Gomez (eds.). Editorial ETRASA 2012. ISBN: 978-84-92625-40-6.
6. Kent, R., Teijeira, R. (2012) Biomecánica de las Lesiones Torácicas (English: Thorax Biomechanics) in Fundamentos de Biomecánica en las Lesiones por Accidente de Tráfico. (English: Fundamentals of Biomechanics and Road Traffic Injuries), Second Edition, C. Arregui, J. Luzon, M. Segui-Gomez (eds.). Editorial ETRASA 2012. ISBN: 978-84-92625-40-6.
7. Kent, R., Ivarsson, J., Maltese, M. (2013) Experimental Testing of the Torso; in Pediatric Injury Biomechanics Archive and Textbook. Springer. ISBN: 978-1-4614-4153-3.

8. Kent, R. and Bass, C. (2007) Experimentación con animales (English: Experimentation with animals); in Fundamentos de Biomecánica en las Lesiones por Accidente de Tráfico. (English: Fundamentals of Biomechanics and Road Traffic Injuries), C. Arregui, J. Luzon, M. Segui-Gomez (eds.). Ars XXI, Madrid, 2007.
9. Kent, R. (2007) A propósito de una lesión y su correspondiente análisis biomecánico (English: Injury biomechanics and its application to the study of a specific injury); in Fundamentos de Biomecánica en las Lesiones por Accidente de Tráfico. (English: Fundamentals of Biomechanics and Road Traffic Injuries), C. Arregui, J. Luzon, M. Segui-Gomez (eds.). Ars XXI, Madrid, 2007.
10. Kent, R and Parenteau, C. (eds.) (2005) Biomechanics 2005, SP-1929, Society of Automotive Engineers, Warrendale, PA.
11. Kent, R and Parenteau, C. (eds.) (2004) Biomechanics, SP-1872, Society of Automotive Engineers, Warrendale, PA.
12. Kent, R. (ed.) (2003) Air Bag Development and Performance: New Perspectives from Industry, Government and Academia. PT-88, Society of Automotive Engineers, Warrendale, PA. ISBN: 978-0-7680-1119-7.
13. Crandall, J, Kent, R, Viano, D, Bass, C. (2003) The Biomechanics of Inflatable Restraints – Occupant Protection and Induced Injury, in Air Bag Development and Performance: New Perspectives from Industry, Government and Academia, R. Kent (ed.), PT-88, Society of Automotive Engineers, Warrendale, PA. ISBN: 978-0-7680-1119-7.
14. Kent, R, Viano, D, Crandall, J. (2003) The Field Performance of Frontal Air Bags in Air Bag Development and Performance: New Perspectives from Industry, Government and Academia, R. Kent (ed.), PT-88, Society of Automotive Engineers, Warrendale, PA. ISBN: 978-0-7680-1119-7.
15. Kent, R and Parenteau, C. (eds.) (2003) Biomechanics, SP-1784, Society of Automotive Engineers, Warrendale, PA.
16. Kent, R and Parenteau, C. (eds.) (2002) Impact Biomechanics, SP-1665, Society of Automotive Engineers, Warrendale, PA.
17. Kent, R, Huelke, D. (eds.) (2001) Airbag Technology 2001, SP-1615, Society of Automotive Engineers, Warrendale, PA.

Refereed Journal Articles (advised student, **supervised post-doctoral scholar)

1. Giudice, J.S., Park, G., Kong, K., Bailey, A., Kent, R., Panzer, M.B. (2018) Development of open-source dummy and impactor models for the assessment of American football helmet finite element models. *Annals of Biomedical Engineering* (in press).

2. Lessley, D., Kent, R., Funk, J., Sherwood, C., Cormier, J., Crandall, J., Arbogast, K., Myers, B. (2018) Video analysis of reported concussion events in the National Football League during the 2015-2016 and 2016-2017 seasons. *American Journal of Sports Medicine* (Impact Factor 5.673) 46(14):3502-3510.
3. Mack, C., Hershman, E., Anderson, R., Coughlin, M., McNitt, A., Sendor, R., Kent, R. (2018) Higher rates of lower extremity injury on synthetic turf compared to natural turf among National Football League athletes: Epidemiologic confirmation of a biomechanical hypothesis. *American Journal of Sports Medicine* (Impact Factor 5.673) 47(1):189-196.
4. Mait, A., Forman, J., **Nie, B., Donlon, J., Mane, A., Forghani, A., Anderson, R., Cooper, M., Kent, R. (2018) Propagation of syndesmotic injuries during forced external rotation in flexed cadaveric ankles. *The Orthopedic Journal of Sports Medicine* 6(6), 2325967118781333. DOI: 10.1177/2325967118781333.
5. Jastifer, J., McNitt, A., Mack, C., Kent, R., McCullough, K., Anderson, R., Coughlin, M. (2018) A close look at synthetic turf: history, design, maintenance and athlete safety. *Sports Health* (Impact Factor 1.56) (in press).
6. Wannop, J., Stefanyshyn, D., Anderson, R., Coughlin, M., Kent, R. (2018) Development of a footwear sizing system in the National Football League. *Sports Health* (Impact Factor 1.56) (in press).
7. McMurry, T., Arbogast, K., Sherwood, C., Vaca, F., Bull, M., Crandall, J., Kent, R. (2018) Rear-facing versus forward-facing child restraints: an updated assessment. *Injury Prevention* (Impact Factor 1.693) 24:55-59.
8. **Nie, B., Forman, J., Panzer, M., Mait, A., Donlon, J., Kent, R. (2017) Fiber-based modeling of *in situ* ankle ligaments with consideration of progressive failure. *J. Biomech.* (Impact Factor 2.431) 61:102-110.
9. **Nie, B., Forman, J., Mait, A., Donlon, J., Panzer, M., Kent, R. (2017) Searching for the "sweet spot": the foot rotation and parallel engagement of ankle ligaments in maximizing injury tolerance. *Biomechanics and Modeling in Mechanobiology* (Impact Factor 3.032) 16(6):1937-1945.
10. Poplin, G., McMurry, T., Forman, J., Ash, J., Parent, D., Craig, M., Song, E., Kent, R., Shaw, C., Crandall, J. (2017) Development of thoracic injury risk functions for the THOR ATD. *Accident Analysis & Prevention* (Impact Factor 2.070) 106:122-130.
11. Mait, A., Mane, A., Forman, J., Donlon, J., **Nie, B., Kent, R. (2017) Transient and long-time kinetic responses of the cadaveric leg during internal and external foot rotation. *J. Biomech.* (Impact Factor 2.431) 53:196-200.

12. Jastifer, J., Kent, R., Crandall, J., Sherwood, C., Lessley, D., McCullough, K., Coughlin, M., Anderson, R. (2017) The athletic shoe in football: apparel or protective equipment? *Sports Health* (Impact Factor 1.56) 9(2):126-131, DOI: 10.1177/1941738117690717.
13. **Nie, B., Panzer, M., Mane, A., Mait, A., Donlon, J., Forman, J., Kent, R. (2017) Determination of the *in situ* mechanical behavior of ankle ligaments. *Journal of the Mechanical Behavior of Biomedical Materials* (Impact Factor 2.876) 65:502-512, DOI: 10.1016/j.jmbbm.2016.09.010.
14. Pramudita, J., Kamiya, S., Ujihashi, S., Choi, H-Y, Ito, M., Watanabe, R., Crandall, J., Kent, R. (2016) Estimation of conditions evoking fracture in finger bones under pinch loading based on finite element analysis. *Computer Methods in Biomechanics and Biomedical Engineering* (Impact Factor 1.850) 20(1): 35-44, DOI: 10.1080/10255842.2016.1196197.
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142. Bready, J, Kent, R, Nordhagen, R. (1999) Seat belt survey: identification and assessment of noncollision Markings. SAE Transactions, *Journal of Passenger Cars*, 108(6): 737-749.
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Refereed Conference Publications (advised student, **supervised post-doctoral scholar)

1. Bruneau, D., Cronin, D., Panzer, M., Vilar, J., Kent, R. (2018) Comparison of the Hybrid III head and neck to a detailed head and neck model in football impacts. *Proc. of the 2018 IRCOBI Conference on the Biomechanics of Impact*, Athens, Greece, in press.
2. Spratley, E., O'Cain, C., Donlon, J., Gepner, G., Forman, J., Kent, R. (2018) Ligament wrapping in a finite element model for predicting sprains within the mid- and forefoot. *Proc. of the 2018 IRCOBI Conference on the Biomechanics of Impact*, Athens, Greece, in press.
3. Holt, C., Graci, V., Seacrist, T., Douglas, E., Kerrigan, J., Kent, R., Balasubramanian, S., Arbogast, K. (2018) Effect of countermeasures on adult kinematics during pre-crash evasive swerving. *Proc. of the 2018 IRCOBI Conference on the Biomechanics of Impact*, Athens, Greece, in press.
4. Joodaki, H., Forman, J., Forghani, A., Overby, B., Kent, R., Crandall, J., Beahlen, B., Beebe, M., Bostrom, O. (2015) Comparison of kinematic behaviour of a first generation obese dummy and obese PMHS in frontal sled tests. IRC-15-57, *Proc. of the 2015 IRCOBI Conference on the Biomechanics of Impact*, pp. 454-466, Lyon, France.
5. Crandall, J., Frederick, E., Kent, R., Lessley, D., Sherwood, C. (2015) Apparatus for measuring the forefoot bending stiffness of cleated American football shoes. *Proc. XII Footwear Biomechanics Symposium (Liverpool 2015)*, (edited by T. Arndt, W. Potthast), *Footwear Science* Vol. 7 Issue S1 p S23-S25.
6. Riley, P., Kent, R., Dierks, T., Lievers, W., Frimenko, R., Crandall, J. (2014) Stiffness of the first MTP joint in athletic activities. *Proc. of the 2014 IRCOBI Conference on the Biomechanics of Impact*, Berlin, Germany.
7. Lopez-Valdes, F., Lau, S., Riley, P., Kent, R. (2014) Characterization of the in-vitro dynamic behavior of the human thoracic spine in flexion. *Proc. of the 2014 IRCOBI Conference on the Biomechanics of Impact*, Berlin, Germany.
8. Forman, J., del Pozo de Dios, E., Symeonidis, I., Duart, J., Kerrigan, J., Salzar, R., Balasubramanian, S., Segui-Gomez, M., Kent, R. (2012) Fracture tolerance related to skeletal development and aging throughout life: 3-point bending of human femurs. *Proc. of the 2012 IRCOBI Conference on the Biomechanics of Impact*, Dublin, Ireland.
9. Frimenko, R., **Lievers, W.B., **Riley, P., Anderson, R., Crandall, J., Kent, R. A method to induce navicular-cuneiform/cuneiform-first metatarsal sprain in athletes. *Proc. of the 2012 IRCOBI Conference on the Biomechanics of Impact*, Dublin, Ireland.

10. Lopez-Valdes, F., Seacrist, T., Balasubramanian, S., Maltese, M., Arbogast, K., Tanji, H., Higuchi, K., Kent, R. (2011) Comparing the kinematics of the head and spine between volunteers and PMHS: a methodology to estimate the kinematics of pediatric occupants in a frontal impact. *Proc. of the 2011 IRCOBI Conference on the Biomechanics of Impact*, Krakow, Poland.
11. Kent, R., Forman, J., Lessley, D., Crandall, J. (2011) Characterization of athletic shoe-turf mechanics *in situ* at loads and rates relevant to game situations. *Proc. of the 2011 IRCOBI Conference on the Biomechanics of Impact*, Krakow, Poland.
12. Pipkorn, B. and Kent, R. (2011) Validation of a human body thorax model and its use for force, energy, and strain analysis in various loading conditions. *Proc. of the 2011 IRCOBI Conference on the Biomechanics of Impact*, Krakow, Poland.
13. Lopez-Valdes, F., Forman, J., Boström, O., Bohman, K., Ash, J., Kindig, M., Lamp, J. Kent, R. (2009) The frontal impact response of a booster-seated child-size PMHS. *Proc. of the 2009 IRCOBI Conference on the Biomechanics of Impact*, York, United Kingdom.
14. Arregui-Dalmases, C., Kindig, M., del Pozo, E., Lopez-Valdes, F., Forman, J., Kent, R. (2009) The magnitude, phasing, and attenuation of pressure waves in the aorta during abdominal belt loading. *Proc. of the 2009 IRCOBI Conference on the Biomechanics of Impact*, York, United Kingdom.
15. **Duprey, S., **Subit, D., Guillemot, H., Kent, R. (2009) Predicting the load transferred to the clavicle from strain data during a shoulder lateral impact – preliminary results. *Proc. of the 2009 IRCOBI Conference on the Biomechanics of Impact*, York, United Kingdom.
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20. Eberhardt, W., Lee, S., Humphrey, J., Kent, R. (2007) Experimental and numerical study of the flow in a synthetic aorta for traumatic rupture conditions. *5th International Symposium on Turbulence and Shear Flow Phenomena*, Munich.
21. Kent, R., Sherwood, C., Henary, B. (2007) The benefits of rear-facing child restraints in side impacts. *Congress Proceedings of the Japanese Society of Automotive Engineers*, Yokohama, Japan.
22. Elhagediab, A., Hardy, W., Rouhana, S., Kent, R., Arbogast, K., Higuchi, K. (2007) Development of an instrumented rate-sensitive abdomen for the six year old Hybrid III dummy. *Congress Proceedings of the Japanese Society of Automotive Engineers*, Yokohama, Japan.
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24. Nordhagen, R., Warner, M., Perl, T., Kent, R. (2006) Accident reconstruction for rear pole impacts of passenger cars. Paper 2006-01-0899 *Proceedings of the Society of Automotive Engineers International Congress and Exposition*, Detroit Michigan.
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29. Ivarsson B, Lessley D, Bhalla K, Kerrigan J, Crandall J, Kent R. (2004) Dynamic response corridors and injury thresholds of the pedestrian lower extremities. *Proceedings of the International Research Council on the Biomechanics of Impact (IRCOBI)*, Graz, Austria.

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31. Bass, C., Kent, R., Salzar, R., Millington, S., Davis, M., Folk, B., Lucas, S., Donnellan, L. (2004) Development of injury criteria for pelvic fracture. *Proceedings of the International Research Council on the Biomechanics of Impact (IRCOBI)*, Graz, Austria.
32. Ali, T, Mattice, J, Forman, J, Kent, R. (2004) Studying 3-D deformation of the thorax under load using computed tomography imaging. *Proceedings of the 8th International Symposium on the 3-D Analysis of Human Movement*, Tampa, Florida.
33. **Murakami, D, Kitagawa, Y, Kobayashi, S, Kent, R, Crandall, J. (2004) Development and validation of a finite element model of a vehicle occupant. Paper 2004-01-0325, *Proceedings of the Society of Automotive Engineers International Congress and Exposition*, Detroit Michigan.
34. Kent, R, and Funk, J. (2004) Data censoring and parametric distribution assignment in the development of injury risk functions from biomechanical data. Paper 2004-01-0317, *Proceedings of the Society of Automotive Engineers International Congress and Exposition*, Detroit Michigan.
35. Lessley, D, Crandall, J, Shaw, C, Kent, R, Funk, J. (2004) A normalization technique for developing corridors from individual subject responses. Paper 2004-01-0288, *Proceedings of the Society of Automotive Engineers International Congress and Exposition*, Detroit, Michigan.
36. Kent, R, Sherwood, C, Lessley, D, Overby, B, Matsuoka, F. (2003) Age-related changes in the effective stiffness of the human thorax using four loading conditions. *Proceedings of the International Research Council on the Biomechanics of Impact (IRCOBI)*, Lisbon, Portugal.
37. Woods, W, Kent, R, Ullman, E, Bass, C. (2002) Effect of multiple exhalation ports in a simulation of trantracheal ventilation with a porcine model of an obstructed airway. *American Academy of Pediatrics 2002 National Conference and Exhibition*, Boston, Massachusetts.
38. Kent, R, Crandall, J, Rudd, R, Lessley, D. (2002) Load distribution-specific viscoelastic characterization of the Hybrid III chest. Paper 2002-01-0024, *Proceedings of the Society of Automotive Engineers International Congress and Exposition*, Detroit, Michigan.
39. Kent, R, Bolton, J, Crandall, J, Prasad, P, Nusholtz, G, Mertz, H, Kallieris, D. (2001) Restrained Hybrid III dummy-based criteria for thoracic hard tissue injury prediction. *Proceedings of the International Research Council on the Biomechanics of Impact (IRCOBI)*, Isle of Man.

40. Shaw, C, Kent, R, Sieveka, E, Crandall, J. (2001) Spinal kinematics of restrained occupants in frontal impacts. *Proceedings of the International Research Council on the Biomechanics of Impact (IRCOBI)*, Isle of Man.
41. Kent, R, and Crandall, J. (2001) Boundary condition effects on thoracic deformation response to anterior impact loading. *Summer Bioengineering Conference, American Society of Mechanical Engineers*, Snowbird, Utah.
42. Kent, R, Crandall, J, Butcher, J, and Morris, R. (2001) Sled system requirements for the analysis of side impact thoracic injury criteria and occupant protection. Paper No. 2001-01-0721, *Proceedings of the Society of Automotive Engineers International Congress and Exposition*, Detroit, Michigan.
43. Butcher, J, Shaw, G, Bass, C, Kent, R, Crandall, J. (2001) Displacement measurements in the Hybrid III chest. Paper 2001-01-0118, *Proceedings of the Society of Automotive Engineers International Congress and Exposition*, Detroit, Michigan.
44. Bready, J, Nordhagen, R, Kent, R, Jakstis, M. (2000) Characteristics of seat belt restraint system markings. Paper 2000-01-1317, *Proceedings of the Society of Automotive Engineers International Congress and Exposition*, Detroit, Michigan.
45. James, M, Smith, G, Kent, R, Perl, T. (1999) Residual crush and delta-v as postcollision evaluators of airbag system performance. *Proceedings of the 32nd International Symposium on Automotive Technology and Automation*, Vienna, Austria.
46. Bready, J, Kent, R, Nordhagen, R. (1999) Survey results and discussion of noncollision restraint system markings. *Proceedings of the 32nd International Symposium on Automotive Technology and Automation*, Vienna, Austria.
47. Bready, J, Kent, R, Nordhagen, R. (1999) Seat belt survey: identification and assessment of noncollision markings. Paper 1999-01-0441, *Proceedings of the Society of Automotive Engineers International Congress and Exposition*, Detroit, Michigan.
48. Kent, R, James, M, Nordhagen, R. (1998) Seat design and occupant protection in rear-impacted vehicles. Paper 98SAF033, *Proceedings of the 31st International Symposium on Automotive Technology and Automation*, Dusseldorf, Germany.
49. Kent, R, Strother, C. (1998) Estimating the energy absorbed by trees and wooden utility poles struck by vehicles. Paper 980214, *Proceedings of the Society of Automotive Engineers International Congress and Exposition*, Detroit, Michigan.
50. Strother, C, Kent, R, Warner, C. (1998) Estimating vehicle deformation energy for vehicles struck in the side. Society of Automotive Engineers, Paper 980215, *Proceedings of the Society of Automotive Engineers International Congress and Exposition*, Detroit, Michigan.

51. Benson, B, Smith, G, Kent, R, Monson, C. (1996) Effect of seat stiffness on out-of-position occupant response in rear-end collisions. Paper 962434, *Proceedings of the 40th Stapp Car Crash Conference*, Albuquerque, New Mexico.

Other Publications (advised student, **supervised post-doctoral scholar)

1. O'Cain, C., Gepner, B., Kerrigan, J., Kent, R., Spratley, E. (2019) Effects of syndesmotic injury and fixation on tibiotalar response. Orthopaedic Research Society, Austin, TX (in press).
2. Donlon, J., Richardson, R., Forman, J., Kerrigan, J., Kent, R., Holt, C., Seacrist, T., Arbogast, K., Maripudi, V. (2018) Restraint biomechanics in frontal impacts with inboard-leaning occupants. *Proc. 46th International Workshop on Human Subjects for Biomechanical Research*, National Highway Traffic Safety Administration, U.S. D.O.T.
3. Donlon, J., Gepner, B., *Fox*, M., Spratley, E., Forman, J., Kent, R. (2018) A computationally efficient method to model soft-tissue wrapping in finite element arthrodial joint models: application to the foot and ankle. *Proc. 8th World Congress of Biomechanics*, Dublin, Ireland.
4. Cooper, M., Mait, A., **Nie, B., Donlon, J., Mane, A., Forghani, A., Anderson, R., Kent, R. (2017) Deltoid ligament injury patterns in external rotation ankle injuries: a cadaveric study. *Foot and Ankle Surgery* 23(S1):26-27.
5. **Nie, B., Forman, J, Mait, A., Donlon, J., Kent, R. (2017) Foot position shifts injury initiation among ankle ligaments during external rotation. *Proc. International Research Council on the Biomechanics of Impact*. Antwerp, Belgium.
6. Holt, C., Seacrist, T., Balasubramanian, S., Graci, V., Kent, R., Kerrigan, J., Yoshida, R., Tanji, H., Arbogast, K. (2017) Kinematics of occupants in pre-crash swerving maneuvers. *Proc. Japanese Society of Automotive Engineers*, Yokohama, Japan.
7. Holt, C., Balasubramanian, S., Seacrist, T., Kerrigan, J., Kent, R., Arbogast, K. (2017) Evaluating occupant kinematic responses to low acceleration time-extended evasive swerving events. *Proceedings of the Injury Biomechanics Symposium at the Ohio State University*, Columbus, Ohio.
8. **Nie, B., Kerrigan, J., Hurwitz, S., Forman, J., Kent, R. (2017) Toward A Better Understanding of High Ankle Sprains in Athletes: Injury Pattern, Sequence and Tolerance in Combined Flexion and External Rotation. ORS 2017 Annual Meeting. Poster No. 1195. San Diego, California, March 19-22.
9. **Nie, B., Panzer, M., Forman, J., Mane, A., Mait, A., Donlon, J., Kent, R. (2016) A fiber-based modelling approach of ankle ligaments *in situ*. *Proc. International Research Council on the Biomechanics of Impact*. Malaga, Spain.

10. Mait, A., Donlon, J., **Nie, B., Forman, J., Anderson, R., Cooper, M., Kent, R. (2016) Foot flexion alters ankle injury patterns and tolerance during forced external rotation. *Proc. 44th International Workshop on Human Subjects for Biomechanical Research*, National Highway Traffic Safety Administration, U.S. D.O.T.
11. Katagiri, M., Zhao, J., Kerrigan, J., Kent, R., Forman, J. (2016) Comparison of whole-body kinematic behavior of the GHBMC occupant model to PMHS in far-side sled tests. *Proc. International Research Council on the Biomechanics of Impact*. Malaga, Spain.
12. Seacrist, T., Kerrigan, J., Holt, C., Balasubramanian, S., Jordan, A., Kent, R., Arbogast, K. (2016) A novel methodology for evaluating occupant response in low acceleration time-extended events. *Proc. International Research Council on the Biomechanics of Impact*. Malaga, Spain.
13. Kent, R., Arbogast, K., Seacrist, T., Holt, C., Kerrigan, J. (2016) Low-acceleration, time-extended events (LATEs): Update on a study of human volunteer and PMHS responses. *Proc. Japanese Society of Automotive Engineers*, Yokohama, Japan.
14. Kent, R., Sherwood, C., Forman, J., Lessley, D., Carbo, J., Hawes, J., Mientjes, M. (2015) Development of an evaluation methodology for American football thigh pads. Biomechanics Consulting & Research white paper. Available at www.biocorellc.com\resources.
15. Mane, A., **Nie, B., Panzer, M. B., Donlon, J. P., Mait, A. R., & Kent, R. W. (2015) Human ankle ligament toe region identification through inverse finite element approach. *13th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering*. Montreal, Canada.
16. Mait, A. R., Mane, A., Donlon, J. P., Forman, J. L., & Kent, R. W. (2015) Kinetics and kinematics of the ankle during foot external rotation. In *Proceedings of the 39th Annual Meeting of the American Society of Biomechanics*. Columbus, Ohio, USA
17. Poland, K., Barth, T., Horak, D., Xu, B., Kent, R., Arbogast, K., Zonfrillo, M. (2015) Video Occupant Kinematics Study Report – Port St. Lucie Bus Crash. National Transportation Safety Board (NTSB) Report (in preparation).
18. Poland, K., Barth, T., Arbogast, K., Zonfrillo, M., Kent, R. (2015) A continuous video recording system on a lap-belt equipped school bus: Real-world occupant kinematics and injuries during a severe side impact crash. *Proceedings of the 24th Conference on the Enhanced Safety of Vehicles*, Gothenburg, Sweden.

19. Joodaki, H, Forman, JL, Forghani, A, Overby, B, Kent, RW, Crandall, JR, Beahlen, B, Beebe, M, Bostrom, O. (2015) Comparison of Kinematic and Dynamic Behavior of an Obese Dummy and Obese PMHS in Frontal Sled Tests. *Proceedings of the Injury Biomechanics Symposium at the Ohio State University*, Columbus, Ohio.
20. Nie, B., **Poulard, D., Subit, D., Donlon, J.P., Forman, J., Kent, R. (2014) Computational modeling of contemporary seatbelt behaviors in frontal impacts *Proc. 42nd International Workshop on Human Subjects for Biomechanical Research*, National Highway Traffic Safety Administration, U.S. D.O.T.
21. Kent, R., Kerrigan, J., Forman, J., Arbogast, K. (2014) The interface of active and passive safety: low-acceleration, time-extended events (LATEs). *Proc. Japanese Society of Automotive Engineers*, Yokohama, Japan.
22. Subit**, D., Poulard**, D., Donlon, J., Kent, R. (2013) Development of a computational framework to adjust the pre-impact posture of a whole-body model based on cadaver tests data. *Proc. 41st International Workshop on Human Subjects for Biomechanical Research*, National Highway Traffic Safety Administration, U.S. D.O.T.
23. Matthews, E., Balasubramanian, S., Seacrist, T., Maltese, M., Arbogast, A., Kent, R., Forman, J., Higuchi, K., Tanji, H. (2013) Comparison of pediatric and young adult far-side head kinematics in low-speed lateral and oblique impacts. *Proceedings of the 23rd Conference on the Enhanced Safety of Vehicles*, Seoul, Korea.
24. Poland, K., Barth, T., Horak, D., Xu, B., Kent, R., Arbogast, K., Zonfrillo, M. (2013) Video Factual Report – Port St. Lucie Bus Crash. National Transportation Safety Board (NTSB) Report. NTSB Docket, NTSB Accident ID HWY12FH008.
25. Poland, K., Barth, T., Kent, R., Arbogast, K., Zonfrillo, M., Horak, D. (2013) Biomechanics Simulation Study – Port St. Lucie Bus Crash. National Transportation Safety Board (NTSB) Report. NTSB Docket, NTSB Accident ID HWY12FH008.
26. Poland, K., Barth, T., Kent, R., Arbogast, K., Zonfrillo, M., Horak, D. (2013) Biomechanics Simulation Study – Port St. Lucie Bus Crash. National Transportation Safety Board (NTSB) Report. NTSB Docket, NTSB Accident ID HWY12FH008.
27. Kent, R., Forman**, J., Lessley, D., Arbogast, K., Higuchi, K. (2013) Oblique and far-side PMHS experiments. *Proc. Japanese Society of Automotive Engineers*, Yokohama, Japan.
28. Matthews, E., Seacrist, T., Balasubramanian, S., Kent, R., Higuchi, K., Arbogast, K. (2013) Effect of age and pre-tensioning on head and spine kinematics in lateral and oblique low-speed loading. *Proc. Japanese Society of Automotive Engineers*, Yokohama, Japan.

29. Kent, R., Forman**, J., Lessley, D., Arbogast, K., Higuchi, K. (2013) A parametric study of far-side restraint mechanics. *Proceedings of the 23rd Conference on the Enhanced Safety of Vehicles*, Seoul, Korea.
30. Glass, G., Kent, R., Maltese, M., Bass, D., Sochor, M. (2013) CT imaging of chest deformation during simulated CPR. *Proc. 11th International Symposium, Computer Methods in Biomechanics and Biomedical Engineering*, Salt Lake City, UT.
31. Frimenko, R., Riley, Pl, Lievers, W., Crandall, J., Kent, R. (2012) An analytic transformation of hallux dorsiflexion measured using skin marker set and bone-mounted marker array. *Medicine & Science in Sports & Exercise* Vol. 44 No. 5 Supplement S714.
32. Rafaels, K., Bass, C., Panzer, M., Salzar, R., Woods, W., Feldman, S., Walilko, T., Kent, R., Capehart, B., Shridharani, J., Toman, A. (2011) Brain injury risk from primary blast. *Proc. BMES*.
33. Kent, R., Lopez-Valdes, F., Lau, S., Kerrigan, J., Lessley, D. (2011) Thoracic response of pediatric PMHS. *Proc. Japanese Society of Automotive Engineers*, Yokohama, Japan.
34. Lopez-Valdes, F., Kent, R., Seacrist, T., Balasubramanian, S., Arbogast, K., Tanji, H., Higuchi, K. (2011) Kinematic response of pediatric occupants in high-speed frontal impacts. *Proc. Japanese Society of Automotive Engineers*, Yokohama, Japan.
35. Pollack, K., Forman, J., de Dios, E., Heredero-Ordoyo, R., Kent, R., Segui-Gomez, M. (2011) Seatbelt effectiveness in preventing injury for obese drivers. *Proc. 139th American Public Health Association Annual Meeting*, Washington, DC.
36. Kent, R., Lopez-Valdes, F., Lamp, J., Lau, S., Parent, D., Kerrigan, J., Lessley, D., Salzar, R. (2011) Characterization of the pediatric chest and abdomen using three post-mortem human subjects. *Proceedings of the 22nd Conference on the Enhanced Safety of Vehicles*, Washington, DC.
37. Bose, D., Li**, Z., Lessley, D., Crandall, J., Kent, R. (2010) Evaluation of deflection-based predictors for estimating thoracic injury risk. *Proc. 38th International Workshop on Human Subjects for Biomechanical Research*, National Highway Traffic Safety Administration, U.S. D.O.T.
38. Li**, Z., Subit**, D., Kindig, M., Kent, R. (2010) Development of a finite element ribcage model of the 50th percentile male with variable rib cortical thickness. *Proc. 38th International Workshop on Human Subjects for Biomechanical Research*, National Highway Traffic Safety Administration, U.S. D.O.T.
39. Lau, S., Lopez-Valdes, F., Lau, A., Lessley, D., Feldman, S., Kent, R. (2010) Assessment of a biological model of a human child in a frontal impact environment. Extended abstract, *Proc. 54th Conference of the Association for the Advancement of Automotive Medicine*.

40. Kent, R., Lopez-Valdes, F., Forman, J., Dennis, N., Seacrist, T., Salasubramanian, S., Arbogast, K., Tanji, H., Higuchi, K. (2010) An inflatable belt system in the rear seat occupant environment: preliminary findings from a series of PMHS sled tests. *6th World Congress on Biomechanics*, Singapore, abstract in *Journal of Biomechanics*.
41. Lopez-Valdes, F., Kent, R., Seacrist, T., Salasubramanian, S., Maltese, M., Arbogast, K., Tanji, H., Higuchi, K. (2010) A methodology to obtain kinematic corridors for pediatric occupants in frontal impacts. *6th World Congress on Biomechanics*, Singapore, abstract in *Journal of Biomechanics*.
42. Seacrist, T., Salasubramanian, S., Garcia-Espana, J., Maltese, M., Arbogast, K., Lopez-Valdes, F., Kent, R., Tanji, H., Higuchi, K. (2010) Dynamic response of the Hybrid III 6 year old ATD compared to size-matched pediatric volunteers in low-speed frontal sled tests. *6th World Congress on Biomechanics*, Singapore, abstract in *Journal of Biomechanics*.
43. Lessley, D., Purtsezov, S., Shaw, G., Parent, D., Riley, P. Kent, R., Crandall, J. (2009) Assessment and validation of a methodology for measuring anatomical kinematics during impact loading. *Proc. 37th International Workshop on Human Subjects for Biomechanical Research*, National Highway Traffic Safety Administration, U.S. D.O.T.
44. Lamp, J., Kent, R. (2009) A biomechanical assessment of the structural response to dynamic belt loading of the Hybrid III 6yo abdominal insert. *Injury Biomechanics Symposium*, Ohio State University.
45. Kent, R., Lopez-Valdes, F., Forman, J., Lamp, J., Kindig, M., Lessley, D., Tanji, H., Higuchi, K. (2009) Biomechanical assessment of an inflatable belt restraint in the rear seat. *Proc. JSAE*, Yokohama, Japan.
46. Lopez-Valdes, F., Kent, R., Shaw, G., Lessley, D., Tanji, H., Higuchi, K. (2009) Optical measurement of 6-DOF kinematics of internal body structures during frontal impact restraint loading. *Proc. JSAE*, Yokohama, Japan.
47. Lopez-Valdes, F., Michaelson, J., Arregui-Dalmases, C., Kent, R., Segui-Gomez, M. (2008) Crash test head-neck injury prediction and correlation with real world data for pediatric occupants. Poster presented at the *52nd Annual Conference of the Association for the Advancement of Automotive Medicine*, La Jolla, CA.
48. Lau, S., Rafaels, K., Kent, R. (2008) An assessment of *Macropus Giganteus* as a biomechanical model of the pediatric thorax. *Injury Biomechanics Symposium*, Ohio State University.

49. **Duprey, S., **Subit, D., Rutherford, A., Kent, R. (2007) Strain-based methodology to assess the load transmitted into the clavicle during shoulder lateral impacts. *Proc. 36th International Workshop on Human Subjects for Biomechanical Research*, National Highway Traffic Safety Administration, U.S. D.O.T.
50. Kindig, M., Forman, J., Lau, A., Kent, R. (2007) Methodology for assessing kinematic and dynamic changes in eviscerated rib cage undergoing anterior loading. *Injury Biomechanics Symposium*, Ohio State University.
51. Michaelson, J. and Kent, R. (2007) Bone density variation throughout the body. *Injury Biomechanics Symposium*, Ohio State University.
52. Lau, A., Kindig, M., Forman, J., Kent, R. (2007) Material properties of the costal chondral junction. *Injury Biomechanics Symposium*, Ohio State University.
53. Eberhardt, C., Lee, S., Humphrey, J., Kent, R. (2007) Experimental and numerical study of the flow in a synthetic aortic for traumatic rupture conditions. Poster presented at the Fifth International *Symposium on Turbulence and Shear Flow Phenomena*, Munich, Germany.
54. Kent, R., Forman, J., Parent, D., Kuppa, S. (2007) Rear seat occupant protection in frontal crashes and its feasibility. *Proceedings of the 20th Conference on the Enhanced Safety of Vehicles*, Lyon, France.
55. Wang, S., Poster, C., Brede, C., Lange, A., Lange, D., Kent, R. (2006) Human body tolerance to high energy impacts: Influence of occupant torso tissue composition on real world crash injuries. *5th World Congress of Biomechanics, Munich*, Germany, abstract in *Journal of Biomechanics* 39(1):S157.
56. Kindig, M., Stacey, S., Mattice, J., Forman, J., Evans, J., Woods, W., Kent, R. (2006) Evaluating the abdominal response of a porcine surrogate to lap belt loading. *The Ohio State University 2nd Annual Injury Biomechanics Symposium.*
57. Forman J, Kent R. (2006) Restraint and speed dependency in Hybrid III thoracic injury prediction: A comparison of Hybrid III and cadaver chest deflection response in restrained frontal sled tests. *The Ohio State University 2nd Annual Injury Biomechanics Symposium.*
58. Lau, A., Mattice, J., **Murakami, D., Oyen, M., Kent, R. (2006) The effects of aging on the material properties of human costal cartilage. *The Ohio State University 2nd Annual Injury Biomechanics Symposium.*
59. Lau, A., Kindig, M., Kent, R. (2006) Material characterization of the costal cartilage junction. *Proceedings of the 34th International Workshop on Human Subjects for Biomechanical Research*, National Highway Traffic Safety Administration, U.S. D.O.T
60. Kent, R., Stacey S., Mattice, J., Kindig, M., Forman, J., Woods, W., Evans, J. (2006) Assessment of abdominal injury criteria for use with pediatric seatbelt loading. *5th World Congress of Biomechanics*, Munich, Germany, abstract in *Journal of Biomechanics* 39(1):S159.

61. **Oyen, M., Lau, A., Kindig, M., Stacey, S., Kent, R. (2006) Mechanical properties of structural tissues of the pediatric thorax. *5th World Congress of Biomechanics*, Munich, Germany, abstract in *Journal of Biomechanics* 39(1):S156.
62. **Oyen, M., **Murakami, D., Kent, R. (2005) Mechanical characterization of costal cartilage. *Proceedings of the 33rd International Workshop on Human Subjects for Biomechanical Research*, National Highway Traffic Safety Administration, U.S. D.O.T.
63. Stacey, S., Mattice, J., Kindig, M., Forman, J., Woods, W., Evans, J., Kent, R. (2005) Response of the pediatric abdomen to seatbelt loading using a porcine model. *Proceedings of the 33rd International Workshop on Human Subjects for Biomechanical Research*, National Highway Traffic Safety Administration, U.S. D.O.T.
64. Kent, R., Woods, W., Stacey, S., Mattice J. (2005) Age correlation of the Yorkshire pig (sus scrofa domestica) to the human child. Poster presented at the *Pediatric Research Symposium*, School of Medicine, University of Virginia, May 2005.
65. Ali, T., Kent, R. (2005) An analytical study of the material and geometric changes in the rib cage of an aging human. Poster presented at the *2005 Injury Biomechanics Symposium*, The Ohio State University, May 2005.
66. Forman, J., Kent, R. Boström, O. (2005) Investigating the force-deflection response of the human thorax under differentially force-limited 3+2 restraint loading. Poster presented at the *2005 Injury Biomechanics Symposium*, The Ohio State University, May 2005.
67. Shaw, C.G., Lessley, D., Kent, R., Crandall, J. (2005) Dummy torso response to anterior quasi-static loading. Paper 05-0371, *Proceedings of the 19th Conference on the Enhanced Safety of Vehicles*, Washington DC.
68. Arbogast, K., Marigowda, S., Kent, R., Stacey, S., Mattice, J., Tanji, H., Higuchi, K., Rouhana, S. (2005) Evaluating pediatric abdominal injuries. *Proceedings of the 19th Conference on the Enhanced Safety of Vehicles*, Washington DC.
69. Mattice, J., Raut, M., Kent, R. (2004) Age-dependent material characterization of porcine abdominal organs. *Proceedings of the 32nd International Workshop on Human Subjects for Biomechanical Research*, National Highway Traffic Safety Administration, U.S. D.O.T.
70. Lee, S-H, Kent, R., Darvish, K. (2004) Finite element modeling of the aging human thorax: Consideration of material changes and restraint system interaction. *Proceedings of the AmeriPam Conference.*

71. Lessley, D, Crandall, J, Kent, R, Shaw, C. (2003) A normalization technique for developing corridors for individual subject force-deflection responses. *Proceedings of the 31st International Workshop on Human Subjects for Biomechanical Research*, National Highway Traffic Safety Administration, U.S. D.O.T.
72. Kent, R, Patrie, J, Poteau, F, Matsuoka, F, Mullen, C. (2003) Development of an age-dependent thoracic injury criterion for frontal impact restraint loading. Paper 72, *Proceedings of the 18th Technical Conference on the Enhanced Safety of Vehicles*, Nagoya, Japan.
73. Kent, R, Bass, C, Woods, W, Sherwood, C, Madeley, N, Salzar, R, and Crandall, J. (2002) The use of a postmortem porcine model to study the effect of muscle tetanus on thoracic force-deflection response. *Proceedings of the 30th International Workshop on Human Subjects for Biomechanical Research*, National Highway Traffic Safety Administration, U.S. D.O.T.
74. Kent, R, Sieveka, E, Crandall, J. (2001) Parametric study of side impact thoracic injury criteria using the MADYMO human body model. Paper 144, *Proceedings of the 17th International Technical Conference on Enhanced Safety of Vehicles*, Amsterdam, The Netherlands.
75. Kent, R, and Crandall, J. (2001) Spinal injury risk assessment for female and small male pilots during ejection loading. *Research Conference*, *Virginia Space Grant Consortium*, NASA Langley, Hampton, Virginia.
76. Kent, R, Crandall, J. (2001) A Restraint-specific, viscoelastic structural model of the human thorax. *Proceedings of the 28th International Workshop on Human Subjects for Biomechanical Research*, National Highway Traffic Safety Administration, U.S. D.O.T.
77. Kent, R, James, M, Nordhagen, R. (1999) Seating design and occupant protection in rear impacted vehicles. *ISATA Magazine*, 7:21-25.

Invited Lectures

1. "Contact Sports on Artificial Grass Pitches: Getting Beneath the Surface of Injury Risk – How Important is the Divot?" IOC World Conference on Prevention of Injury & Illness in Sport, International Olympic Committee, Monaco, March 2020.
2. "Footwear and Injury Prevention in the National Football League" Keynote Address at the Footwear Biomechanics Symposium, Alberta, Canada, July 2019.
3. "Characterizing the Shape of NFL Athletes' Feet Using a 3D Laser Scanner: Injury Prevention and Footwear Selection" Keynote Address at Injuries in Football Conference, Andrews Institute of Sports Medicine, May 2018.
4. "Rear-Facing for Best Protection: Experimental, Computational, and Epidemiological Evidence" in Good, Better, Best: Car Seat Laws, Instructions and Best Practices, Lifesavers National Conference on Highway Safety Priorities, San Antonio, TX, April 2018.
5. "Concussion and lower limb injury prevention programs in the National Football League" Annual Scientific Session, NFL Physician's Society, Indianapolis, IN, March 2018.
6. "Biomechanics, Injury Prevention, and the Selection of Football Equipment" Annual Convention of the Athletic Equipment Managers Association, Atlanta, GA, June 2017.
7. "Innovation in Experimental Biomechanics" Innovation 2017, Oakland University, Auburn Hills, MI, May 2017.
8. "Assessing the Safety Performance of Football Equipment Head to Toe – Recommendations on Turf, Shoes, Body Padding, and Helmets" 94th Annual Convention of the American Football Coaches Association (AFCA), Nashville, TN, January 2017.
9. "Concussions in the National Football League" HeadHealthTECH Symposium, National Football League. Washington, DC, November 2016.
10. "Injury Criteria in the proposed update to the U.S. New Car Assessment Program (NCAP)". Takata Technical Center, Aishō-cho, Shiga, Japan, May 2016.
11. "Future Advances in the Care of Football Players: What's on the Horizon. Advances in Equipment Design." The American Orthopaedic Society for Sports Medicine, May 2016, Denver, CO.
12. "Shoes and Surfaces: Partners in the Reduction of Injury Risk for Elite Athletes", 27th Annual Sports Turf Managers Association Conference, January 2016, San Diego, CA.
13. "Rollover Crash Protection and the Future of Passive Safety" Takata Technical Center, Aishō-cho, Shiga, Japan, October 2015.

14. "Turf Science and Injury Prevention" Synthetic Turf Council, March 2015, San Diego, CA.
15. "Recommended Practices for the Evaluation of NFL Turf" NFL Sports Field Manager Education Symposium, March 2015, Fort Lauderdale, FL.
16. "A Wrinkle in Time: How 50 Years of Automotive Medicine is Informing a Quantum Change in the Protection of Elite Athletes" University of Michigan, September 2014.
17. "Age as a Modifier of a Multi-Point Thoracic Injury Risk Function for THOR-Metric" Japan Automotive Research Institute, Tokyo City University, Tokyo, Japan, May 2014.
18. "Describing the Biomechanics of Individuality" JSAE Forum on Advanced Engineering and Medical Joint Research, Yokohama, Japan, May 2013.
19. "Engineering is Not a Career. For Better or Worse, It's a State of Being" Engineering Student Council Tech Talks, University of Virginia, March 2013.
20. "Shoe-turf Interaction, Injury Risk, and Performance of Elite Athletes" Sports Turf Managers Association 24th Annual Conference and Exhibition, Daytona Beach, Florida, January 2013.
21. "Balancing Performance and Foot Injury Risk in Elite Athletes" Universite Claude Bernard, Lyon, France, December 2012.
22. "Methods for Personalizing Computational Models of the Human Body: Primitives, Shell Games, and Homogenization Schemes" University of Michigan, Ann Arbor, October 2012.
23. "NFL Research to Reduce Player Injury" Synthetic Turf Council. Dallas, TX, October 2012.
24. "Aging Driver Safety: How Biomechanics and Epidemiology Inform the Technology of Active and Passive Safety" Advanced Engineering and Medical Joint Research Workshop. Japan Automotive Research Institute, Ichigaya-Tokyo, Japan, May 2012.
25. "Novel Experimental Models in Injury Biomechanics: Musteline, Macropodine, and Porcine, Oh My" The Ohio State University, Columbus, Ohio, May 2012.
26. "Child and Young Driver Motor Vehicle Safety" Pegasus Annual Conference – Critical Response 2012, Charlottesville, VA, April 2012.
27. "Safe Transportation for an Aging Population - Risk of Crash Involvement vs. Risk of Adverse Outcomes" UVa Retired Faculty Association Luncheon, Charlottesville, VA, February 2012.
28. "Novel Experimental Models in Injury Biomechanics: Musteline, Macropodine, and Porcine, Oh My." University of Utah Distinguished Alumnus Lecture, Salt Lake City, UT, September 2011.

29. "New Data on Pediatric Trunk and Whole Body Biomechanics" Monash University, Prato, Italy, September 2011.
30. "The Latest Auto Technology: Does It Make Driving Safer or are there Hidden Dangers?" Charlottesville Senior Center, Charlottesville, VA May 2011.
31. "An Inflatable Belt System in the Rear Seat Occupant Environment" Industry/Government Meeting, Society of Automotive Engineers, Washington, DC, January 2011.
32. "Structural Behavior of the Pediatric Chest and Abdomen: Results of Pediatric PMHS Experiments" Industry/Government Meeting, Society of Automotive Engineers, Washington, DC, January 2011.
33. "An Inflatable Belt System in the Rear Seat Occupant Environment: Preliminary Findings from a Series of PMHS Sled Tests" invited lecture, World Congress of Biomechanics, Singapore, August 2010.
34. "Contemporary Topics In Injury Biomechanics" Takata Technical Center, Aishō-cho, Shiga, Japan, July 2010.
35. "Fragility, Frailty, and Environment: Distinct Challenges for Crash Injury Mitigation in an Aging Population" Collision Safety Engineering, Orem, Utah, May 2010.
36. "Computers in Unlikely Places: How Advances in Computing Technology are Making it Safer to Age and Drive" Charlottesville Senior Center, Charlottesville, VA March 2010.
37. "Circumstances of Crashes Involving Older Drivers" Industry/Government Meeting, Society of Automotive Engineers, Washington, DC, January 2010.
38. "Geometric and Material Scaling of Adult Biomechanical Data to Estimate the Biomechanics of the Pediatric Trunk" Institut National de Recherché sur les Transports et leur Securite (INRETS) and Université Claude Bernard Lyon, Lyon, France January 2010.
39. "Pediatric Thoracoabdominal Biomechanics" ParisTech University, Paris, France, January 2010.
40. "Toward a World Without Trauma Bays: Biomechanics, Injury Causation Analysis, and Trauma Prevention" George Washington University, Washington, DC, January 2010.
41. "Toward a Mechanistic Theory of Traumatic Aortic Rupture: Experimental and Numerical Studies at the University of Virginia" Temple University, Philadelphia, PA, November 2009.
42. "Pediatric Thoracoabdominal Biomechanics" Chalmers University of Technology, Göteborg, Sweden, September 2009.

43. "Crash Exposure, Risk, and Restraint Biomechanics in the Rear-Seat Environment: The Roles of NASS-CDS, NHTS, CIREN, and Laboratory Testing", Necessary Conditions for the Establishment of Crash Injury Research and Engineering Network System in Japan Conference, Tokyo City University, Tokyo, Japan, May 2009.
44. "Injury Biomechanics, Thoracoabdominal Trauma, and Vulnerable Populations", Universidad de Navarra, Pamplona, Spain, April 2009.
45. "Fragility, Frailty, and Environment: Distinct Challenges for Crash Injury Mitigation in an Aging Population" Industry/Government Meeting, Society of Automotive Engineers, Washington, DC, February 2009.
46. "Rear Seat Occupant Safety" Collision Safety Engineering, Orem, Utah, October 2008.
47. "Fragility, Frailty, and the Biomechanics of Aging" North American Congress on Biomechanics (NACOB), Ann Arbor, Michigan, August 2008.
48. "The Mechanics of Rear Seat Occupant Protection" SAFER Vehicle and Traffic Safety Centre, Chalmers University of Technology, Göteborg, Sweden, April 2008.
49. "The Feasibility and Effectiveness of Pretensioned and Load-limited Belt Restraints in the Rear Seat Environment" Automotive Occupant Restraints Council 2008 Annual General Meeting, Palm Coast, Florida, March 2008.
50. "The Development of Enhanced Pediatric Dummy Response Requirements" Agency Briefing, National Highway Traffic Safety Administration, U.S. Department of Transportation, Washington, DC, February 2008.
51. "Injury Tolerance and Aging: Implications for Crash Protection" Collision Safety Engineering, Orem, Utah, July 2007.
52. "Characterization of Temporal Behavior in Biological Materials" TECNUN, San Sebastian, Spain, April 2007.
53. "Injury Biomechanics Terminology and General Principles" presentation at the Biomechanics of High Impact Trauma, sponsored by the U.S. NTSB Academy at the George Washington University, Ashburn, VA, April 2007.
54. "Thoracoabdominal Injury Biomechanics" presentation at the Biomechanics of High Impact Trauma, sponsored by the U.S. NTSB Academy at the George Washington University, Ashburn, VA, April 2007.
55. "Restraint System Biomechanics – Minimizing Whole-Body Risk" presentation at the Biomechanics of High Impact Trauma, sponsored by the U.S. NTSB Academy at the George Washington University, Ashburn, VA, April 2007.
56. "Introduction to Injury Biomechanics" Universdad de Navarra, Pamplona, Spain April 2007.

57. "Passive Safety Challenges" Universdad de Navarra, Pamplona, Spain April 2007.
58. "The Next 50 Years in Automotive Medicine: An Engineer's Perspective" keynote presentation at the 50th anniversary conference of the Association for the Advancement of Automotive Medicine, Chicago, IL, October 2006.
59. "'Special' Populations: Recent Research on the Biomechanics of Aging" presentation to the Ecole Nationale Supérieure d'Arts et Métiers (ENSAM), Paris, France, October 2006.
60. "Overview of Recent Aging Research at UVA" Agency Briefing, National Highway Traffic Safety Administration, U.S. Department of Transportation, Washington, DC, July 2006.
61. "Current Topics in Restraint Biomechanics" Autoliv AB Engineering Development Retreat, Alingsås, Sweden, June 2006.
62. "The Development and Use of Injury Risk Functions from Biomechanical Data" Nissan Corporation, Yokohama, Japan, May 2006.
63. "Biomechanical Response of the 6-Year-Old Abdomen to Belt Loading" NASVA, Tokyo, Japan, May 2006.
64. "Restraint Design with an ATD: Considerations and Limitations" Takata, Echigawa, Japan, May 2006.
65. "Child Passenger Safety Research at the University of Virginia" Takata, Echigawa, Japan, May 2006.
66. "Biomechanical Response of the 6-year-old Abdomen to Belt Loading" SAE Industry/Government Meeting, Washington, DC, May 2006.
67. "Battle of the Length Scales: How Material and Structure Contribute to Injury" presentation to the Department of Mechanical Engineering, University of Utah, Salt Lake City, March 2005.
68. "Current Topics in Injury Biomechanics" presentation to Toyota Central Research and Development Laboratory, Gotemba, Japan, February 2005.
69. "Contemporary Injury Biomechanics Research" presentation to DaimlerChrysler Tier 1 Counsel Annual Meeting, Scottdale, AZ, January 2005.
70. "Tradeoff: Assessment of Societal Injury Risk from a Belt 'Supertensioner' and a Limiting Performance Analysis of Optimal Societal Benefit", presentation to Delphi, Troy, Michigan, November 2004.
71. "The Basics of Crash Injury and Biomechanics: An Overview", keynote lecture at the "Biomechanics in Motor Vehicle Crashes" conference sponsored and accredited by the Universdad de Navarra in conjunction with World Health Day 2004, Pamplona, Spain April 2004.
72. "The Aging Thorax", presentation to Biodynamic Research Corp., San Antonio, Texas, March 2004.

73. "Thoracoabdominal Anatomy, Biomechanics, and Injury Causation" The Basics of Crash Injury and Biomechanics Course sponsored by the AAAM and the University of Miami, New Orleans, LA, October 2003.
74. "Restraint Systems: Minimizing Whole-Body Injury Risk" The Basics of Crash Injury and Biomechanics Course sponsored by the AAAM and the University of Miami, New Orleans, LA, October 2003.
75. "Current Issues and Future Concerns in Thoracic Injury Prevention" presented to Nissan Motor Company, Yokohama, Japan, May 2003.
76. "Restraint Loading and the Aging Thorax" presented at the University of Michigan Program for Injury Research and Education, Ann Arbor, Michigan, January 2003.
77. "Thoracic and Abdominal Injury Biomechanics" presented at The Biomechanics of Trauma – Understanding the Limits of Human Tolerance Course sponsored by the Association for the Advancement of Automotive Medicine and the University of Pennsylvania School of Medicine, Tempe, Arizona, September 2002.
78. "Occupant Restraint Systems: Current and Future" presented at The Biomechanics of Trauma – Understanding the Limits of Human Tolerance Course sponsored by the Association for the Advancement of Automotive Medicine and the University of Pennsylvania School of Medicine, Tempe, Arizona, September 2002.
79. "The Use of Material Constitutive Models to Describe Other Physical Phenomena" seminar presented to the University of Utah Department of Mechanical Engineering, Salt Lake City, Utah, September 2002.
80. "The Use of MADYMO to Elucidate Injury Mechanisms in a Complex, Multiple-Impact Collision" presented at the 8th Quarterly Crash Injury Research and Engineering Network Conference, University of Washington, Seattle, Washington, August 2002.
81. "The Efficacy of Injury Criteria for Evaluating Side Impact Occupant Protection Systems," SAE Industry/Government Meeting, Washington, DC, May 2002.
82. "Geriatric Trauma Patients: Physiologic and Biomechanical Considerations," presented at the 7th Quarterly Crash Injury Research and Engineering Network Conference, Washington, DC, December 2001.
83. "Side Impact: Injury Criteria Trends and Alternative Load Paths," presented to Toyota Research and Development, Toyota-shi, Japan, November 2001.
84. "Static and Dynamic Restraint Optimization – Implications for an Aging Population," presented to Toyota Research and Development, Toyota-shi, Japan, November 2001.

85. "Side Impact Thoracic Injury Criteria and Occupant Protection Through Load Sharing," presented to Honda Research and Development, Utsunomiya, Japan, October 2001.
86. "Padding, Space, and Door Dynamic Effects on Injury Criteria Trends in Side Impacts," Advances in Side Impact Test Methodologies and Occupant Protection Toptec, sponsored by the Society of Automotive Engineers, Novi, Michigan, August 2001.
87. "Restraint System Optimization for an Aging Population," presentation given at the Aging and Driving Symposium, sponsored by the Association for the Advancement of Automotive Medicine, Southfield, Michigan, February 20, 2001.
88. "Introduction to Impact Biomechanics – A Discussion of Fundamental Concepts," presentation given to the Fairfax Inova Hospital CIREN Team, December 7, 2000.
89. "Biomechanics of Blunt Thoracic Trauma," presentation given to the Department of Mechanical Engineering, Virginia Polytechnic Institute and State University, Blacksburg, Virginia, November 3, 2000.
90. "A Methodology for Population-Based Restraint System Optimization," presentation given at Automotive Medicine in the New Millennium, special session of the 44th Annual Scientific Conference, Association for the Advancement of Automotive Medicine, Chicago, Illinois, October 3, 2000.
91. "What are the Fundamental Concepts of Side Impact Protection?" presentation given at the Advanced Air Bag Technology in Frontal and Side Impacts Conference sponsored by the Association for the Advancement of Automotive Medicine, Southfield, Michigan, June 28, 2000.
92. "Multiple-Vehicle Collisions and Collisions with Roadside Objects," presentation given at Car Crashes and Occupant Injuries: A Team Approach to Crash Investigation, sponsored by the Association for the Advancement of Automotive Medicine, the University of Miami School of Medicine, and the William Lehman Injury Research Center, Miami, Florida, April 2000.
93. "Design and Development of a Side Impact Sled System," presentation given to Biomechanics Division, Ford Motor Company, Dearborn, Michigan, January 21, 2000.
94. "Passenger-Side Frontal Air Bag and Injury Response," presentation given to Biomechanics Division, Ford Motor Company, Dearborn, Michigan, January 21, 2000.
95. "Methods for Estimating the Energy Absorbed by Roadside Objects," presentation given at Accident Reconstruction: State-of-the-Art Toptec, sponsored by the Society of Automotive Engineers, Costa Mesa, California, December 1999.

96. "Issues in Vehicle Compatibility - A Discussion of Crashworthiness and Aggressivity," presentation given at Car Crashes and Occupant Injuries: A Team Approach to Crash Investigation, sponsored by the Association for the Advancement of Automotive Medicine and the University of Maryland School of Medicine, Tempe, Arizona, April 1999.
97. "Investigation and Analysis of Rear Impacts," presentation given at Car Crashes and Occupant Injuries: A Team Approach to Crash Investigation, sponsored by the Association for the Advancement of Automotive Medicine and the University of Maryland School of Medicine, Tempe, Arizona, April 1999.
98. "Reconstructing Side Impact Accidents with Occupant Motion," presentation given at Side Impact Toptec: Design Considerations for Safer Vehicles, sponsored by the Society of Automotive Engineers, Tempe, Arizona, May 1998.
99. "Analyzing Rear Impacts," presentation at the Multidisciplinary Crash Investigation Course, Association for the Advancement of Automotive Medicine, Tempe, Arizona, April 1998.
100. "Estimating Crush Energy, BEV, and ΔV for Vehicles Struck in the Side," presentation given to Toyota Motor Sales, Torrance, California, January 1998.
101. "High Speed Rear Impact Cases in the National Automotive Sampling System (NASS)," presentation given at High Speed Rear Impact Toptec, sponsored by the Society of Automotive Engineers, Tempe, Arizona, October 1997.

Provided interviews to various media outlets including National Public Radio, ABC news, NBC news, CBS news, New York Times, the Wall Street Journal, Sports Illustrated, Baltimore Sun, Boston Globe, SportTechie.com, Newscientist.com, Sciencedaily.com, Fast Company, the Bureau of National Affairs (BNA) news service, the Associated Press, Sacramento Bee, the Philadelphia Inquirer, and the Charlottesville Daily Progress. His research was featured during the 2017 Super Bowl.

Service to Professional Societies

Stapp Advisory Committee, 2009-Present

Association for the Advancement of Automotive Medicine (AAAM)

Member, 1996-present.

Director, 2003-2006; 2008-2014.

Fellow Committee, 2009-Present

Member-at-large, Executive Committee, 2004-2005.

Chair, Scientific Program Committee, 2004-2005.

Organizer, Special Course "The Basics of Crash Injury and Biomechanics," 2003.

Vice Chair, Scientific Program Committee, 2003-2004.

Moderator, Annual Scientific Conference, 2002-2005.

Member, Scientific Program Committee, 2002-2005.

Faculty, Special Course "Biomechanics of Impact Trauma," 2002.

Faculty, Special Course "Multidisciplinary Crash Investigation", 1998-2002.

Chair, Young Member Taskforce, 2000-2001.

Society of Automotive Engineers (SAE)

Member, 1992-present (named Fellow in 2008).

Member, THOR Evaluation Task Group, 2005-Present.

Member, Occupant Protection Committee, 2000-Present.

Organizer and Chair, Biomechanics Technical Session, World Congress, 2002, 2003, 2004, 2005.

Member, Safety Transactions Selection Committee, 1998-2004.

Organizer and Chair, Air Bags Technical Session, World Congress, 2001.

Member, Accident Reconstruction Transactions Selection Committee, 1997-2000.

Member, Seat Standards Committee, 1997-2002.

Chair, Subcommittee on Recommended Practice J269, 1997-2000.

Instructor, "A World in Motion," 1994.

Other

Founding co-chair, Joint NFL/NFLPA Field Surface Safety and Performance Committee Consultant, National Football League and NFL Players Association (2017-Present)

NFL Engineering Committee (founding member) (2017-present).

Duke University HeadHealthTech: Challenge Oversight Committee (2016-2017).

NFL Foot and Ankle Committee Consultant, National Football League (2008-Present).

NFL Head, Neck and Spine Committee Consultant, National Football League (2014-Present).
Chair, NFL Taskforce for Game Day Turf Recommended Practices (2011-2016).
Member, Sigma Xi (1995-present)
Member, American Society of Biomechanics (2003-present)
Member, International Society of Biomechanics (2006-present)
Member, American Society of Mechanical Engineers
Past member, American Mathematical Society
Past member, American Physical Society
Organizer, "Biomechanics of High-Impact Injuries" course, National Transportation Safety Board (NTSB) Academy, 2007.
Organizer, Session 5.6 Thorax Injury Biomechanics, World Congress of Biomechanics, 2006.
Co-organizer, "Biomechanics in Motor Vehicle Crashes" sponsored and accredited by the Universdad de Navarra in conjunction with World Health Day 2004.
Organizer/Founding Participant, Biennial Workshop on Setting the Future Agenda for Child Occupant Protection, Gothenburg, Sweden (2009-Present).

Editorships

Associate Editor, Biomechanics, Traffic Injury Prevention (2004-2015)
Stapp Advisory Board (Editorial Board of Stapp Car Crash Journal) (2009-Present)

Reviewer for Journals and Conferences

Reviewer, The Physician and Sports Medicine (2018-Present)
Reviewer, PLOS ONE (2017-Present)
Reviewer, Case Reports in Pathology (2017-Present)
Reviewer, Computer Methods in Biomechanics and Biomedical Engineering (2009-Present)
Reviewer, Journal of Applied Biomechanics (2010-Present)
Reviewer, Clinical Biomechanics (2010-Present)
Reviewer, Annals of Biomedical Engineering (2007-Present)
Reviewer, Journal of Biomechanics (2004-Present)
Reviewer, International Journal of Impact Engineering (2006-Present)
Reviewer, Proc. IEEE (2006-Present)
Reviewer, International Journal of Crashworthiness (2004-Present).
Reviewer, International Journal of Vehicle Design (2004-Present).
Panel of Referees, Accident Analysis and Prevention (2000-2004).

Panel of Reviewers, Assoc. for the Advancement of Automotive Medicine (1999-Present).
Panel of Reviewers, Injury Prevention (2004-Present).
Paper Reviewer, Traffic Injury Prevention (2003-2004).
Paper Reviewer, Journal of Automobile Engineering, Proc. IMechE.
Paper Reviewer, IRCOBI (1999-Present).
Panel of Reviewers, SAE (1996-Present).
Panel of Reviewers, Enhanced Safety of Vehicles (ESV) Conference (2010-Present)

Advising Government Agencies

Expert panelist, Public Forum on Safety, Mobility, and Aging Drivers, NTSB, November 2010.

DOT National Highway Traffic Safety Administration agency-wide briefing on aging trauma research, 2006

SAE Annual Industry-Government Meeting, 2002, 2006, 2009, 2010, 2011

Technical Consultant – National Transportation Safety Board, 2012-Present

Peer Reviewer for Government Agencies

Reviewer of Proposed Injury Criteria for the updated New Car Assessment Program (NCAP), US DOT (2017).

Review Panel, National Center for Injury Prevention and Control, Centers for Disease Control and Prevention (CDC) (2004-Present)

Review Panel, Enhanced Safety of Vehicles, National Highway Traffic Safety Administration, U.S. D.O.T. (2010-Present)