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Endowed Chair, Biomechanics, J.B. Speed School of Engineering  
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### **I. PERSONAL**

#### **Education**

- 1997      Doctorate of Philosophy in Bioengineering, University of Pittsburgh
- 1991      Master of Science in Mechanical Engineering, University of Pittsburgh
- 1983      Bachelor of Science in Mechanical Engineering, University of Pittsburgh

#### **Experience**

- 2012-pres   Professor, Department of Bioengineering, J.B. Speed School of Engineering, University of Louisville, Louisville, KY
- 2012-pres   Professor (associate appointments), Department of Mechanical Engineering, Department of Pediatrics, University of Louisville, Louisville, KY
- 2012-pres   Endowed Chair, Biomechanics, Department of Bioengineering, J.B. Speed School of Engineering, University of Louisville, Louisville, KY
- 2009-2012   Professor, Department of Mechanical Engineering, J.B. Speed School of Engineering, University of Louisville, Louisville, KY
- 2004-2012   Endowed Chair, Biomechanics, Department of Mechanical Engineering, J.B. Speed School of Engineering, University of Louisville, Louisville, KY
- 2009-2012   Professor (associate appointment), Department of Bioengineering, J.B. Speed School of Engineering, University of Louisville, Louisville, KY
- 2009-pres   Professor (associate appointment), Department of Pediatrics, School of Medicine, University of Louisville, Louisville, KY
- 2008-pres.   Adjunct Associate Professor, Department of Rehabilitation Science and Technology, School of Health and Rehabilitation Sciences, University of Pittsburgh
- 2006-2012   Associate Director, Rehabilitation Engineering Research Center on Wheelchair Transportation Safety, University of Louisville, Louisville, KY

- 2004-2009 Associate Professor, Department of Mechanical Engineering, J.B. Speed School of Engineering, University of Louisville, Louisville, KY
- 2004-2009 Associate Professor (associate appointment), Department of Bioengineering, J.B. Speed School of Engineering, University of Louisville, Louisville, KY
- 2004-2009 Associate Professor (associate appointment), Department of Pediatrics, School of Medicine, University of Louisville, Louisville, KY
- 2003-2004 Associate Professor, Department of Rehabilitation Science and Technology, School of Health and Rehabilitation Sciences, University of Pittsburgh
- 2003-2004 Associate Professor (secondary appointment), Bioengineering, Swanson School of Engineering, University of Pittsburgh
- 2003-2004 Associate Professor (secondary appointment), Pediatrics, School of Medicine, University of Pittsburgh
- 2001-2004 Director, Rehabilitation Engineering Research Center on Wheelchair Transportation Safety, School of Health and Rehabilitation Sciences, University of Pittsburgh
- 1999-2003 Assistant Professor, Department of Rehabilitation Science and Technology, School of Health and Rehabilitation Sciences, University of Pittsburgh
- 1999-2003 Assistant Professor (secondary appointment), Bioengineering, Swanson School of Engineering, University of Pittsburgh
- 1999-2003 Assistant Professor (secondary appointment), Pediatrics, School of Medicine, University of Pittsburgh
- 1997-2003 Director, Injury Risk Assessment and Prevention Laboratory, Department of Rehabilitation Science and Technology, School of Health and Rehabilitation Sciences, University of Pittsburgh
- 1997-1999 Research Assistant Professor, Department of Rehabilitation Science and Technology, School of Health and Rehabilitation Sciences, University of Pittsburgh
- 1994-1997 Research Associate, Department of Rehabilitation Science and Technology, School of Health and Rehabilitation Sciences, University of Pittsburgh

Non-Academic Positions

- 2010-pres. Co-Founder and Research Director, Bearcat Innovations, LLC
- 1996-1999 Engineering Consultant, ARTSCO, Pittsburgh, PA
- 1991-1994 Associate Director, Engineering Facilities Management, University of Pittsburgh, Pittsburgh, PA

- 1987-1991 Sr. Mechanical Engineer, Energy Systems Business Unit, Westinghouse Electric Corporation, Pittsburgh, PA
- 1983-1987 Mechanical Engineer, Physical Plant Division, University of Pittsburgh, Pittsburgh, PA

### **Professional Affiliations**

- 2011-pres. American Institute of Medicine and Biological Engineering, Fellow
- 2014-2018 National Post-Doctoral Association, Member
- 2008-2015 International Association of Veterinary Rehabilitation and Physical Therapy
- 2004-2007 Transportation Research Board, Member  
Committee on Accessible Transport and Mobility
- 2003-pres. Rehabilitation Engineering and Assistive Technology Society of North America, Member
- 1999-pres. ISO Wheelchair Transportation Standards Committee, Chair  
Seating for Use in Motor Vehicles - Working Group
- 1998-pres. International Standards Organization (ISO), Wheelchair Transportation Standards Committee, Member
- 1997-2000 Sigma Xi, Full Member
- 1997-1999 Articulated Total Body Simulation Group, Vice President
- 1996-2013 ANSI/RESNA Wheelchair Transportation, Chair  
Standards - Seating Crashworthiness Working Group
- 1994-2014 American Society of Biomechanics, Member

### **Awards, Recognition and Professional License**

- 2017- Department of Veterans Affairs – Rehabilitation Research & Development Service – Scientific Merit Review Board Member
- 2013 University of Pittsburgh – Distinguished Alumni Award – Department of Bioengineering
- 2012 KY Innovation & Entrepreneurship Conference Competition Award
- 2012 Expert, Canadian Foundation for Innovation’s Leading Edge
- 2011 American Institute of Medicine and Biological Engineering Fellow
- 2010-pres. ISO US Designated Expert – Wheelchair Transportation
- 2008 Champions 4 Her Award Recipient, University of Louisville
- 2005-pres. Graduate Faculty – University of Louisville
- 2002 American Academy of Pediatrics – Injury Section: “One of the Top 10 Articles in 2001”

2002	Best Poster Award – Frontiers in Rehab Research Conference
2000	Distinguished Teaching Award - Rehabilitation Science & Technology
1997	RESNA/Whitaker Student Scientific Paper Competition Award
1995	American Society of Artificial Internal Organs - Medforte Engineering Innovation Award
1987-pres.	Pennsylvania Professional Engineer License, PE #036305-E
1982	Tau Beta Pi Engineering Honor Society
1980	Bausch and Lomb Honorary Science Scholarship Award

## II. RESEARCH/SCHOLARLY ACTIVITY

### Publications

#### Peer Reviewed Journal Articles

1. Everson T, Kaczor K, Makoroff K, Meyers G, Rosado N, Charleston E, **Bertocci G**, Young A, Flores J, Lehnig K, Pierce MC. Epigenetic Differences in Stress Response Gene FKBP5 Among Children with Abusive vs Accidental Injuries, *Pediatric Research*, submitted Mar 2022.
2. **Bertocci G**, Smalley C, Brown N, Dsouza R, Hilt B, Thompson A, Bertocci K, McKinsey K, Cory D, Pierce MC. Head Biomechanics of Video Recorded Falls Involving Children in a Childcare Setting, *Scientific Reports*, Vol 12 (8617), <https://doi.org/10.1038/s41598-022-12489-7>, May 2022.
3. McKinsey K\*\*, Thompson A, Dsouza R, **Bertocci G**. Development of a Model to Predict 3D Femur Morphology in Infants and Young Children, *Computer Methods in Biomechanics and Biomedical Engineering*, submitted Nov 2021.
4. **Bertocci G**<sup>†</sup>, Brown N<sup>†</sup>, Thompson A, Bertocci K, Adolphi N, Dvorscak L, Pierce M. Healthy Femur Morphology in Young Children, *Clinical Anatomy*, Vol 35(3), 305-315, Apr 2022. doi: 10.1002/ca.23825. Epub Dec 2021.
5. Narang SN, Sachdev KK, Bertocci KL, Pierre-Wright MJ, Kaczor K, **Bertocci G**, Pierce MC. Overturned Abusive Head Trauma and Shaken Baby Syndrome Convictions: Prevalence, Legal Basis and Medical Evidence, *Child Abuse & Neglect*, Vol 122, 105380, [doi.org/10.1016/j.chiabu.2021.105380](https://doi.org/10.1016/j.chiabu.2021.105380), Nov 2021.
6. Pierce MC, Kaczor K, Lorenz D, **Bertocci G**, Fingarson A, Makoroff K, Berger R, Berkeley B, Magana J, Staley S, Ramaiah V, Fortin K, Currie M, Herman B, Herr S, Hymel K, Jenny C, Sheehan K, Zuckerbraun N, Hickey S, Meyers G, Leventhal J. Validation of a Clinical Decision Rule to Predict Abuse in Young Children Based on Bruising, *JAMA Open Network*, Vol 4(4), e215832, [doi:10.1001/jamanetworkopen.2021.5832](https://doi.org/10.1001/jamanetworkopen.2021.5832), Apr 2021.
7. McKinsey K\*\*\*, Thompson A<sup>†</sup>, **Bertocci G**. Investigation of Femur Fracture Potential in Common Pediatric Falls using Finite Element Analysis, *Computer Methods in Biomechanics and Biomedical Engineering*, [doi.org/10.1080/10255842.2020.1837119](https://doi.org/10.1080/10255842.2020.1837119) Oct 2020.

8. Brown N\*, **Bertocci G**, States G\*, Levene G, Levene J, Howland D. Development of a Canine Rigid Body Musculoskeletal Computer Model to Evaluate Gait, *Frontiers Bioengr & Biotech*, Vol 8(150), doi: 10.3389/fbioe.2020.00150, Mar 2020.
9. Fortin K<sup>†</sup>, **Bertocci G**<sup>†</sup>, Pierce MC, Nicholas J. Long Bone Fracture Characteristics in Children with Medical Conditions that can Affect Bone Health, *Child Abuse & Neglect*, Vol 103, e104396, doi.org/10.1016/j.chiabu.2020.104396, Feb 2020.
10. Kriss S\*\*, Thompson A, **Bertocci G**, Currie M, Kriss V, Characteristics of Rib Fractures in Young Abused Children, *Pediatric Radiology*, Vol 50, 726–733, doi: 10.1007/s00247-019-04599-8, Jan 2020.
11. Frost K<sup>†</sup>, **Bertocci G**<sup>†</sup>, Smalley C, Ramps Remain a Barrier to Safe Wheelchair User Transit Bus Ingress/Egress, *Disability & Rehabilitation – Assistive Technology*, doi: 10.1080/17483107.2019.1604824, Jan 2019.
12. Brown N\*, **Bertocci G**, Cheffer K, Howland D, A Three-Dimensional Multi-Plane Kinematic Model for Bilateral Hind Limb Gait Analysis in Cats, *PLOS One*, Vol 13(8), e0197837, doi.org/10.1371/journal.pone.0197837, Aug 2018.
13. **Bertocci G**, Smalley C, Page A, DiGiovine C, Manual Wheelchair Propulsion on Ramp Slopes Encountered when Boarding Public Transit Buses, *Disability & Rehabilitation – Assistive Technology*, 1-5, doi: 10.1080/17483107.2018.1465602, Jun 2018.
14. Frost K<sup>†</sup>, **Bertocci G**<sup>†</sup>, Smalley C, Wheelchair Tiedown and Occupant Restraint Practices in Paratransit Vehicles, *PLOS One*, Vol 13(1): e0186829, Jan 2018.
15. Frost K, **Bertocci G**, Wheelchair Tiedown and Occupant Restraint Activity in Paratransit Vehicles Database, *Inter-university Consortium for Political and Social Research*, doi:10.3886/ICPSR36970.v1, Jan 2018.
16. Lorenz D, Pierce MC, Kaczor K, Berger R, **Bertocci G**, Herman B, Herr S, Hymel K, Jenny C, Leventhal J, Sheehan K, Zuckerbraun N, Classifying Injuries Identified in Pediatric Emergency Departments as Abusive or Accidental: Reliability and Accuracy of an Expert Panel Approach, *Journal of Pediatrics*, vol 198: 144–150.e4, doi:10.1016/j.jpeds.2018.01.033, Jul 2018.
17. Dsouza R\*, **Bertocci G**, Potential Bruising Patterns Associated with Bed Falls in Children, *Forensic Science International*, Vol 286:68-95, Feb 2018.
18. Thompson A,<sup>†</sup> **Bertocci G**,<sup>†</sup> Smalley C, Femur Loading in Feet-First Fall Experiments using an Anthropomorphic Test Device, *Journal of Forensic & Legal Medicine*, Vol 58:25-33, Mar 2018.
19. **Bertocci G**, Brown N, Mich P, Characteristics of Cranial Cruciate Ligament-Deficient Dogs Prescribed Stifle Orthoses, *Topics in Small Animal Medicine*, Vol 32(4):130-138, 2017.
20. Salipur Z\*, **Bertocci G**, Influence of Transit Bus Normal Driving Conditions on Wheelchair Occupants and WTORS Loads, submitted to *Medical Engr & Physics*, Apr 2017.

21. **Bertocci G**, Smalley C, Brown NP, K Bialczak, D Carol, Aquatic Treadmill Water Level Influence on Pelvic Limb Kinematics in CrCL-Deficient Dogs with Surgically-Stabilized Stifles, *J Small Animal Practice*, 1-8, 2017. doi: 10.1111/jsap.12770
22. **Bertocci G**, Thompson A, Pierce MC, Femur Fracture Morphology under Torsional and Bending Loads in an *In Vitro* Immature Porcine Model, *Legal & Forensic Medicine*, Vol 52:5-11, Aug 2017.
23. Brown N\*, **Bertocci G**, Marcellin-Little D, Canine Cranial Cruciate Ligament Deficient Stifle Biomechanics Associated with Extra-Articular Stabilization Predicted using a Computer Model, *Veterinary Surgery*, Vol 46(5); 653-662, 2017. doi:10.1111/vsu.12652
24. Stillman M, **Bertocci G**, Frost K, Smalley C, Williams S, Healthcare Utilization and Associated Barriers Experienced by Wheelchair Users, *Disability Health Journal*, Vol 10(4):502-508, Feb 2017. doi: 10.1016/j.dhjo.2017.02.003
25. **Bertocci G**, Brown NP, Mich PM, Biomechanics of an Orthosis-Managed Cranial Cruciate Ligament Deficient Canine Stifle Joint Predicted by Use of a Computer Model, *American Journal of Veterinary Research*, Vol 78(1):27-35, Jan 2017.
26. Jenny C, **Bertocci G**, Fukuda T, Rangarajan N, Shams T, Biomechanical Response of the Infant Head to Shaking - An Experimental Investigation, *J Neurotrauma*, Vol 34:1-10, Jan 2017.
27. Duerr F, Pauls A, Board W, Rao S, Kawcak C, Haussler K, **Bertocci G**, Moorman V, King M, Evaluation of Inertial Measurement Units as a Novel Method for Kinematic Gait Evaluation in Dogs, *Veterinary Comparative Orthopaedics and Traumatology*, Vol 29(6):485-483, Nov 2016.
28. **Bertocci G**, Brown N\*, Embleton N, Barkowski V, Canine Stifle Biomechanics Associated with a Novel Extracapsular Articulating Implant Predicted Using a Computer Model, *Veterinary Surgery*, Vol 45(3):327-335, Apr 2016.
29. Dsouza R\*, **Bertocci G**, Potential Bruising Patterns Associated with Rearward Falls in Children, *Forensic Science International*, Vol 261:129-136, Apr 2016.
30. Frost KL, **Bertocci G**, Stillman M, Smalley C, Williams S, Accessibility of Outpatient Healthcare Providers for Wheelchair Users: A Pilot Study, *Journal of Rehabilitation Research and Development*, Vol 52(6):653-62, May 2015.
31. Brown N\*, **Bertocci G**, Marcellin-Little D, Influence of Biomechanical Parameters on the Canine Cranial Cruciate Ligament Deficient and Intact Stifle Using a Computer Simulation Model, *American Journal of Veterinary Research*, Vol 76(11):952-958, Nov 2015.
32. Brown N\*, **Bertocci G**, Marcellin-Little D, Canine Stifle Biomechanics Associated with Tibial Tuberosity Advancement Predicted Using a Computer Model, *Veterinary Surgery*, Vol 44(7):866-873, Oct 2015.
33. Frost K, **Bertocci G**, Smalley C, Ramp-Related Incidents Involving Wheeled Mobility Device Users During Transit Bus Boarding/Alighting, *Archives of Physical Medicine & Rehabilitation*, Vol 96(5):928-33, May 2015. – **Cited by 2017 Americans with**

**Disabilities Act regulation to substantiate changes to accessibility requirements (36 CFR Part 1192 Final Rule) – first revision since 1990.**

34. Thompson A\*, **Bertocci G**, Smalley C, Kaczor K, Pierce MC, Biomechanical Investigation of the Classic Metaphyseal Lesion using an Immature Porcine Model, *American Journal of Roentgenology*, Vol 204(5):W503-9, May 2015.
35. Ahmed M\*\*, Campbell-Kyureghyan N, Frost K, **Bertocci G**, Identifying Challenges to Securing Wheelchairs using Tiedown and Occupant Restraint Systems from the User Perspective, *Institute of Industrial Engineers Transactions on Occupational Ergonomics and Human Factors*, Vol 2(2), Nov 2014.
36. Brown N\*, **Bertocci G**, Marcellin-Little D, Canine Stifle Biomechanics Associated with Tibial Plateau Leveling Osteotomy Predicted using a Computer Model, Vol 75(7): 626-32, *American Journal of Veterinary Research*, July 2014.
37. Stillman M, Frost K, Smalley C, **Bertocci G**, Williams S, Health Care Utilization and Barriers Experienced by Individuals with Spinal Cord Injury, *Archives of Physical Medicine & Rehabilitation*, Vol 95(6):1114-1126, June 2014.
38. **Bertocci G**, Frost K, Smalley C, Public Transit Bus Ramp Slopes Measured *In Situ*, *Disability & Rehabilitation: Assistive Technology*, Vol 11(2): 133-138, DOI: 10.3109/17483107.2014.913714, (epub May 2014), 2016.
39. Dsouza R\*, **Bertocci G**, Design and Development of a Force Sensing Skin Adapted to a Child Surrogate to Identify Potential Bruising Locations, *Technology*, Vol 2(1): 49-54, March 2014.
40. Brown N\*, **Bertocci G**, Marcellin-Little D, Evaluation of Canine Stifle Morphologic Parameters on Cranial Cruciate Ligament-Intact and Deficient Biomechanics Using a Computer Simulation Model, *American Journal of Veterinary Research*, Vol 75(1):26-33, 2014.
41. Thompson A\*, **Bertocci G**, Pediatric Bed Fall Computer Simulation Model: Parametric Sensitivity Analysis, *Medical Engineering & Physics*, Vol 36(1):110-118, 2014.
42. Brown N\*, **Bertocci G**, Marcellin-Little D, Development of a Canine Stifle Computer Model for Evaluation of Cranial Cruciate Ligament Deficiency, *Journal of Mechanics in Medicine and Biology*, Vol 13(2): 1350043-1350071, 2013.
43. Ahmed M, Campbell-Kyureghyan N, Frost K, **Bertocci G**, Ergonomic Evaluation of a Wheelchair Transportation Securement System, *Work: A Journal of Prevention, Assessment and Rehabilitation*, Vol 41: 4924-4930, 2012.
44. Frost K, **Bertocci G**, Salipur Z, Wheelchair Securement and Occupant Restraint System (WTORS) Practices in Public Transit Buses, *Assistive Technology*, Vol 25, 16-23, 2013.
45. Buning ME, **Bertocci G**, Karg P, Manary M, Schneider L, RESNA Position Paper on WC19 Wheelchairs: Wheelchairs That Comply with Section 19 ANSI/RESNA WC/Volume 4: *Wheelchairs Used as Seats in Motor Vehicles*, *Assistive Technology*, Vol 24(2), 2012.

46. Thompson A\*, **Bertocci G**, Pierce MC, Assessment of Injury Potential in Pediatric Bed Fall Experiments using an Anthropomorphic Test Device, *Accident Analysis & Prevention*, Vol 50, 16-24, 2013.
47. Salipur Z\*, Frost K, **Bertocci G**, Investigation of Wheelchair Instability During Transport In Large Accessible Transit Vehicles, *Journal of Rehab Research & Development*, Vol 49(6), 935-948, 2012.
48. Thompson A\*, **Bertocci G**, Pediatric Bed Fall Computer Simulation Model: Development and Validation, *Computer Methods in Biomechanics and Biomedical Engineering*, Vol 15(1), 1-10, 2012.
49. Frost K, van Roosmalen L, **Bertocci G**, Cross D, Wheeled Mobility Device Transportation Safety in Fixed Route and Demand-Responsive Public Transit Vehicles, *Assistive Technology*, Vol 24(2), 87-101, 2012.
50. Thompson A\*, **Bertocci G**, Rice W, Pierce MC, Pediatric Short-Distance Household Falls: Biomechanics and Associated Injury Severity, *Accident Analysis and Prevention*, Vol 43, 143-150, 2011.
51. Frost K, **Bertocci G**, Sisson S\*, Ingress/Egress Incidents Involving Wheelchair Users in a Fixed-Route Public Transit Environment, *Journal of Public Transportation*, Vol 13(4), 41-62, Dec 2010.
52. Salipur Z\*, **Bertocci G**, Wheelchair Tiedown and Occupant Restraint Loading Associated with an Adult Manual Transit Wheelchair in Rear Impact, *Journal of Rehab Research & Development*, Vol 47(2), 143-150, 2010.
53. Salipur Z\*, **Bertocci G**, Development and Validation of Rear Impact Computer Simulation Model of an Adult Manual Transit Wheelchair with a Seated Occupant, *Medical Engineering and Physics*, Vol 33(1), 66-75, Jan 2010.
54. Fuhrman S\*\*, Karg P, **Bertocci G**, Characterization of Pediatric Wheelchair Kinematics and Wheelchair Tiedown and Occupant Restraint System Loading During Rear Impact, *Medical Engineering and Physics*, Vol 32(3), 280-286, 2010.
55. D'Souza R\*, **Bertocci G**, Development and Validation of a Computer Crash Simulation Model of an Occupied Adult Manual Wheelchair Subjected to a Frontal Impact, *Medical Engineering and Physics*, Vol 32(3), 272-279, 2010.
56. Frost K, **Bertocci G**, Retrospective Review of Adverse Incidents Involving Passengers Seated in Wheeled Mobility Devices While Traveling in Large Accessible Transit Vehicles, *Medical Engineering and Physics*, Vol 32(3), 230-236, 2010. **Cited by 2017 Americans with Disabilities Act regulation to substantiate changes to accessibility requirements (36 CFR Part 1192 Final Rule) – first revision since 1990.**
57. Karg P, Buning ME, **Bertocci G**, Fuhrman S, Hobson D, Manary M, Schneider S, van Roosmalen L. State of the Science Workshop on Wheelchair Transportation Safety, *Assistive Technology*, Vol 21(3), 115-60, 2009.
58. Chadwick D, **Bertocci G**, Castillo E, Frasier L, Gunther E, Hansen K, Herman B, Krous H, The Annual Risk of Death from Short Falls of Young Children: Less Than One in a Million, *Pediatrics*, Vol. 121(6); 1213-1224, June 2008.



59. Knight A\*, **Bertocci G**, Pierce MC, Assessment of Head Injury Risk Associated with Feet-First Free Falls In 12-Month-Old Children Using An Anthropomorphic Test Device, *Journal of Trauma*, Vol 66(4), 1019-1029, April 2009.
60. Fuhrman S\*\*, Karg P, **Bertocci, G**, Effect of Wheelchair Headrest Use During Rear Impact on Pediatric Head and Neck Injury Risk Outcomes, *Accident Analysis and Prevention*, Vol 40(4); 1595-1603, July 2008.
61. Pierce MC, **Bertocci G**, Injury Biomechanics and Child Abuse, *Annual Reviews in Biomedical Engineering*, Vol 10; 85-106, 2008.
62. Buning ME, Armstrong C, **Bertocci G**, Fitzgerald S, Riding a Bus While Seated in a Wheelchair: Attitudes, Behavior and Knowledge of Safety Practices, *Assistive Technology*, Vol 19.4, Dec 2007.
63. Ha D\*, **Bertocci G**, Jategaonkar R, Development and Validation of a Frontal Impact 6 Yr Old Wheelchair Seated Occupant Computer Model, *Assistive Technology*, Vol 19.4, Dec 2007.
64. Wolf P, van Roosmalen L, **Bertocci G**, Wheelchair Tiedown and Occupant Restraint System Issues in the Real World and Virtual World: Ethnography Meets Computer Simulation, *Assistive Technology*, Vol 19.4, Dec, 2007.
65. Ha D\*, **Bertocci G**, Injury Risk of a 6 Year Old Wheelchair Seated Occupant in a Frontal Motor Vehicle Impact – Sled Testing Analysis, *Medical Engr and Physics*, Volume 29, Issue 7; 729-738, September 2007.
66. Schneider L, Hobson D, **Bertocci G**, Development of Voluntary Equipment Standards for Transportation Safety of Wheelchair Users, *Assistive Technology*, Vol 20, No 8; 222-233, Winter, 2008.
67. **Bertocci G**, Pierce MC, Applications of Biomechanics Aiding in the Diagnosis of Child Abuse, *Clinical Pediatric Emergency Medicine*, Vol 7, No 3; 194-199, Sept, 2006.
68. Pierce MC, **Bertocci G**, Fractures Resulting from Inflicted Trauma: Assessing Injury and History Compatibility, *Clinical Pediatric Emergency Medicine*, Vol 7, No 3; 143-148, Sept, 2006.
69. Richards P, **Bertocci G**, Bonshek R, Giangrande P, Gregson R, Jaspan T, Shaken Baby Syndrome Before the Court of Appeal, *Archives of Disease in Childhood*, 91; 205-206, 2006.
70. Frost K\*, **Bertocci G**, Wassinger C, Munin M, Burdett R, Fitzgerald S, Isometric Performance Following Total Hip Replacement and Rehabilitation, *Journal of Rehab Research and Devel*, Vol 43(4), July/Aug 2006.
71. Deemer E\*, **Bertocci GE**, Pierce MC, Aguel F, Janosky J, Vogeley E, Influence of Wet Surfaces and Fall Height on Pediatric Injury Risk in Feet First Freefalls as Predicted Using a Test Dummy, *Medical Engr and Physics*, Vol 27, 2005.
72. Pierce GE, **Bertocci GE**, Janosky J, Aguel F, Deemer E, Moreland M, Boal D, Garcia S, Herr S, Zuckerbraun, N, Vogeley E, Femur Fractures Resulting From Stair Falls in Children: An Injury Plausibility Model, *Pediatrics*, Vol 115, June, 2005.

73. van Roosmalen L\*, Reed M, **Bertocci G**, Pilot Study of Safety Belt Usability for Vehicle Occupants Seated in Wheelchairs, *Assistive Technology*, Vol 17.1, Spring, 2005.
74. **Bertocci GE**, Pierce MC, Deemer E, Aguel F, Janosky JE, Vogeley E, Influence of Fall Height and Impact Surface on Biomechanics of Feet-First Free Falls in Children. *Injury*, 35 (4): 417-424, 2004.
75. Pierce MC, **Bertocci GE**, Vogeley E, Moreland M, Evaluating Long Bone Fractures in Children: A Qualitative Biomechanical Approach with Illustrative Cases. *Child Abuse and Neglect*, May, 2004.
76. **Bertocci GE**, Munin MC, Frost KL, Burdett R, Wassinger C, Fitzgerald SG, Isokinetic Performance Following Total Hip Replacement, *American Journal of Physical Medicine and Rehabilitation*, Vol 83, Jan, 2004.
77. **Bertocci GE**, van Roosmalen L, Wheelchair Caster Loading During Frontal Impact, Vol 15.2, *Assistive Technology*, Winter, 2003.
78. Geyer MJ, Brienza DM, **Bertocci GE**, Crane B, Hobson D, Karg P, Schmeler M, Trefler E, Wheelchair seating: a state of the science report, *Assistive Technology*. 15(2):120-8, Winter, 2003.
79. Cooper RA, Boninger ML, Brienza DM, van Roosmalen L, Koontz AM, LoPresti E, Spaeth DM, **Bertocci GE**, Guo SF, Buning ME, Schmeler M, Geyer MJ, Fitzgerald SG, Dan Ding D, Pittsburgh Wheelchair and Seating Biomechanics Research Program, *Journal of Society of Biomechanisms*, Vol 27: 144-157, 2003.
80. **Bertocci GE**, Pierce MC, Deemer E, Aguel F, Janosky JE, Vogeley E, Using Test Dummy Experiments To Investigate Pediatric Injury Risk In Simulated Short Distance Falls. *Archives of Pediatric and Adolescent Medicine*, Vol 157(5): 480-486, May, 2003.
81. **Bertocci GE**, Souza A, Szobota S, The Effects of Wheelchair Seating Stiffness and Energy Absorption on Occupant Frontal Impact Kinematics and Submarining Risk using Computer Simulation. *Journal of Rehab Research and Development*, Vol 40(2): 125-130, March/April, 2003.
82. Ha D\*, **Bertocci GE**, Deemer E, Karg P, Evaluation of Wheelchair Sling Back and Seat Crashworthiness. *Medical Engineering & Physics*, Vol 24(6): 441-448, 2002.
83. Pierce MC, **Bertocci GE**, Berger R, Vogeley, E, Injury Biomechanics for Aiding in the Diagnosis of Non-accidental Head Trauma, *Pediatric Neurosurgery Clinics of North American*, Vol 13(2): 155-168, 2002.
84. Vogeley E, Pierce MC, **Bertocci GE**, Experience with Wood's Lamp Illumination and Digital Photography in the Documentation of Bruises on Human Skin. *Archives of Pediatric and Adolescent Medicine*, Vol 156(3): 165-168, Mar 2002.
85. van Roosmalen L\*, **Bertocci GE**, Hobson D, Karg P, Preliminary Evaluation of Wheelchair Occupant Restraint System Usage in Motor Vehicles. *Journal of Rehab Research and Development*, Vol 39(1): 83-93, Jan/Feb, 2002.

86. **Bertocci GE**, Manary M, Ha D, Wheelchairs Used as Seats in Motor Vehicles: Seat Loading in Frontal Impact Testing. *Medical Engineering & Physics*, Vol 23(1), 679-685, 2001.
87. van Roosmalen L\*, **Bertocci GE**, Ha D, Karg P, Feasibility of a Wheelchair Integrated Occupant Restraint Concept in Frontal Impact. *Medical Engr & Physics*, Vol 23(10): 687-698, 2001.
88. **Bertocci GE**, Pierce MC, Deemer E, Aguel F, Computer Stair Fall Simulation to Investigate Scenarios in Child Abuse. *Archives of Pediatric and Adolescent Medicine*, Vol 155(9): 1008-1014, Sept, 2001. *One of Top 10 Articles – Amer Acad of Pediatrics: Injury Section*
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91. **Bertocci GE**, Evans J, Injury Risk Assessment of Wheelchair Occupant Restraint Systems in a Frontal Crash: A Case for Integrated Restraints. *Journal of Rehab Research and Development*, Vol 37(5): 573-589, Oct, 2000.
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#### Peer Reviewed Conference Proceedings

1. Cory D, **Bertocci G**, Thompson A, Smalley C, Brown N, Dsouza R, Bertocci K, McKinsey K. Characterization of Video-Recorded Falls Involving Children in a Childcare Setting. *Ohio State University Injury Biomechanics Symposium*, Virtual Meeting, May 2021.
2. Pierce MC, Kaczor K, Marsit C, Makoroff K, Meyers G, Bennett B, Lorenz D, **Bertocci G**, Lehnig K, Charleston E, Everson T. Lower DNA methylation in the stress response gene, FKBP5, in young children with abusive vs. accidental injuries. *Pediatric Academic Societies*, Virtual Meeting, May 2021.
3. Pierce MC, Kaczor K, Marsit C, Makoroff K, Meyers G, Bennett B, Lorenz D, **Bertocci G**, Lehnig K, Charleston E, Everson T. Lower DNA methylation in the stress response gene, FKBP5, in young children with abusive vs. accidental injuries. *Ray Helfer Honor Society*, Virtual Meeting, May 2021.
4. **Bertocci G**, Smalley C, Brown N, Dsouza R, Thompson A, Bertocci K, Hilt B, Cory D, McKinsey K, Pierce MC. Injuries and Biomechanics of Falls involving Young Children in a Childcare Setting, *Shaken Baby Syndrome and Abusive Head Trauma Symposium*, Virtual Meeting, Sept 2020.
5. Kriss S, Thompson A, **Bertocci G**, Currie M, Kriss V. Incidence and Location of Abusive Skeletal Injuries in Infants and Children: Does Perpetrator Handedness Matter? *Shaken Baby Syndrome and Abusive Head Trauma Symposium*, Virtual Meeting, Sept 2020.
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7. Pierce MC, Kaczor K, Marsit C, Rosado N, Makoroff K, Lorenz D, Bennett B, Meyers G, Lehnig K, Charleston E, Everson T, Bertocci G. Differences in DNA Methylation in Stress Response Gene FKBP5 in Young Children with Abuse or Accidental Injuries.

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8. McKinsey K, Thompson A, Dsouza R, **Bertocci G**. Development of a Statistical Shape Model of the Infant Femur. *Ohio State University Injury Biomechanics Symposium*, Columbus OH, May 2019.
  9. Narang S, Sachdev K, Bertocci K, Kaczor K, **Bertocci G**, Mason M, Pierce MC. Understanding Overturned and Exonerated Shaken Baby Syndrome Cases. *Helper Honor Society*, Orlando Florida, Apr 2019.
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  12. Dsouza R, **Bertocci G**, Development of a Computer Simulation Model to Describe Potential Bruising Patterns Associated with Common Childhood Falls, *IEEE International Symposium on Signal Processing and Information Technology – Bioengineering*, Louisville KY, Dec 2018.
  13. McKinsey K, Thompson A, **Bertocci G**, Investigating Potential Fractures in Feet-First Falls Using an *in-Silico* Pediatric Femur, *IEEE International Symposium on Signal Processing and Information Technology – Bioengineering*, Louisville KY, Dec 2018.
  14. Brown N, **Bertocci G**, States G, Armagno A, Frugui Y, Levine G, Howland D, Development of a Rigid Body Musculoskeletal Computer Model for Evaluation of Gait in a Healthy and Neurologically Impaired Chondrodystrophic Dog, *IEEE International Symposium on Signal Processing and Information Technology – Bioengineering*, Louisville KY, Dec 2018.
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  19. Jenny C, **Bertocci G**, Using Anatomic Testing Devices (Crash Test Dummies) in Research and in Court: Why such disparate results?, *6<sup>th</sup> International Conference on Pediatric Abusive Head Trauma*, Asheville NC. June 2017.

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21. Pierce MC, Kaczor K, Lorenz D, Makoroff K, Sheehan N, Fortin K, Hymel K, Berger R, **Bertocci G**, Jenny C, Herman B, Leventhal J. Bruising Clinical Decision Rule (BCDR) Discriminates Physical Child Abuse From Accidental Trauma: A Validation Study, - **American Academy of Pediatrics – Best Emergency Medicine Abstract Award** - *Pediatric Academic Society Conference*, San Francisco CA. May 2017.
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24. Kriss S, **Bertocci G**, Thompson A, Kriss V. Incidence and Location of Abusive Skeletal Injuries in Infants and Children: Does Perpetrator Handedness Matter? *Google International Science Fair*, **Top 30 Finalist in the Americas and Top 100 Finalist Worldwide**, Oct 2016.
25. Thompson A, **Bertocci G**, Development of a Biofidelic Instrumented Femur for Investigation of Femur Fracture Potential in Pediatric Fall Simulations using an Anthropomorphic Test Device, *Shaken Baby Syndrome/Abusive Head Trauma Symposium*, Montreal, Canada, Sept 2016.
26. Dsouza R, **Bertocci G**, Design, Development and Use of a Surrogate Bruising Detection System to Describe Impact Sites (Potential Bruising Patterns) Associated with Falls in Children, *Shaken Baby Syndrome/Abusive Head Trauma Symposium*, Montreal, Canada, Sept 2016.
27. Young C, Tiernan J, **Bertocci G**, Simm C, A Model of a Wheelchair Head Restraint to Reduce the Risk of Whiplash, *IRCOBI Conference*, Malaga Spain, Sept 2016.
28. Kriss S, **Bertocci G**, Thompson A, Currie M, Kriss V, Incidence and location of abusive skeletal injuries in infants and children: does perpetrator handedness matter? *International Pediatric Radiology Conference*, Chicago IL, May 2016.
29. Pelisch N, Cheffer K, Brown N, Whyland K, Winter S, O'Steen W, **Bertocci G**, Howland D, Kinematic analysis using 3D sagittal and novel multiple plane models for the study of gait recovery in quadrupeds with neurological disorders, *Society for Neuroscience*, Chicago IL, 2015.
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40. Thompson A, **Bertocci G**, Pierce MC, Smalley C, Biomechanical Investigation of the Classic Metaphyseal Lesion using a Porcine Model, *Helper Society Conference*, Annapolis, MD, Apr 2014.
41. Smalley C, Frost K, **Bertocci G**, Ramp Slopes Encountered by Wheeled Mobility Device Users in Public Transit Buses, *RESNA Conference*, Seattle, WA, June 2013.
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49. Salipur Z, Bertocci G, Kinematic Environment And Consequences Of Wheelchair Tiedown And Occupant Restraint System Practices In Fixed-Route Transit, *E-Expo*, Louisville, KY, March 2012.
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51. Ahmed M, Campbell N, Frost K, **Bertocci G**, Ergonomic Evaluation of Wheelchair Transportation Securement, accepted for *18<sup>th</sup> International Ergonomics Association World Congress*, Recife, Brazil, Feb 2012.
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54. Rice W, Thompson A, **Bertocci G**, Pierce MC, Investigation of Injury Risk Associated with Common Household Falls in Young Children, *Pediatric Academic Society Conference*, Vancouver, BC, May 2010.
55. Thompson A, **Bertocci G**, Rice W, Pierce MC, Pediatric Short-Distance Household Falls: Biomechanics and Associated Injury Severity, *Shaken Baby Syndrome/Abusive Head Injury Conference*, Atlanta, GA, Sept 2010.
56. Rice W, Thompson A, Pierce MC, Kim I, **Bertocci G**, Investigation of Injury Risk Associated with Common Household Falls in Children, *Research Louisville*, Oct 2009.
57. Thompson A, **Bertocci G**, Rice W, Pierce MC, Biomechanics Of Pediatric Short-Distance Household Falls: Relationships With Injury Severity, *Research Louisville*, Oct 2009.
58. Frost K, **Bertocci G**, Wheelchair Securement and Occupant Restraint Practices in Public Transit Buses, *RESNA Conference*, New Orleans, June 2009.



59. Fuhrman S, **Bertocci G**, Karg P, Effect Of Positioning Of Wheelchair Mounted Headrests During Transportation In A Motor Vehicle On Pediatric Neck Injury Criteria Outcomes, *RESNA Conference*, New Orleans, June 2009.
60. Manary M, Ritchie N, Flannagan C, **Bertocci G**, Schneider L, The Effects of Pelvic Belt Anchoring Location on Wheelchair Seating System Loads in Frontal Impact Motor Vehicle Crashes, *RESNA Conference*, New Orleans, June 2009.
61. Brown N, Bertocci G, Marcellin-Little D, Development of a Canine Stifle Computer Model to Investigate Cranial Cruciate Ligament Deficiency, **1st Place Winner – MS/PhD Mechanical Engineering Category**, *Engineering Expo*, Louisville, Ky, March 2009.
62. **Bertocci G**, Fowler E, Bieger N, Hollihan T, Robinson H, Design and Development of a Low Cost Canine Wheeled Mobility Device, *5th International Symposium on Rehabilitation and Physical Therapy in Veterinary Medicine*, Minneapolis, MN, Aug 2008.
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65. Fuhrman S\*\*, Karg P, **Bertocci G**, Development Of A Pediatric Manual Wheelchair Rear Impact Computer Simulation Model, *International Conference on Mechanics in Medicine and Biology*, Pittsburgh, PA, July 2008.
66. D’Souza R\*, **Bertocci G**, Development and Validation of a Computer Crash Simulation Model of an Occupied Adult Manual Wheelchair Subjected to a Frontal Impact, *RESNA Conference*, Washington DC, June 2008.
67. Sison S\*, Frost K, **Bertocci G**, Wheelchair Ingress/Egress Activities in Large Accessible Transit Vehicles, **Honorable Mention Paralyzed Veteran’s of America Student Scientific Paper Competition**, *RESNA Conference*, Washington DC, June 2008.
68. Salipur Z\*, **Bertocci G**, Development and Validation of Rear Impact Computer Simulation Model of an Adult Manual Transit Wheelchair with a Seated Occupant, *RESNA Conference*, Washington DC, June 2008.
69. Samorezov JE, Manary MA, Skowronska MM, **Bertocci GE**, Schneider LW, Patterns of Wheelchair Frame Response in Frontal Impact Sled Tests, *RESNA Conference*, Washington DC, June 2008.
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72. Hembergers E\*, **Bertocci G**, Frost K, Pierce MC, Identification of a Low Risk Zone for Pediatric Buckle Femur Fractures, **Dean’s Special Commendation Award**, University of Louisville, *Research Louisville*, Louisville, KY, Oct 2007.
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75. Manary M, Bezaire B, **Bertocci G**, Salipur Z, Schneider L, Crashworthiness of Forward-Facing Wheelchairs in Rear Impact, *RESNA Conference*, Phoenix, AZ, June 2007.
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78. Fuhrman S\*\*, Karg T, **Bertocci G**, Effect of Wheelchair Headrest Use During Rear Impact on Pediatric Head and Neck Injury Risk Outcomes, **Honorable Mention Paralyzed Veteran’s of America Student Scientific Paper Competition**, *RESNA Conference*, Phoenix, AZ, June 2007.
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87. Fuhrman S\*\*, Karg P, **Bertocci G**, Characterization of Pediatric Wheelchair Kinematics and WTORS Loading During Rear Impact – **Winner Of Paralyzed Veterans of America Student Scientific Paper Competition**, *RESNA Conference*, Atlanta GA, June 2006.
88. Ritchie N, Manary M, **Bertocci G**, Schneider L, Validation of a Surrogate Wheelchair Base for Evaluation of Wheelchair Seating System Crashworthiness, *RESNA Conference*, Atlanta GA, June 2006.
89. Bialczak K\*, **Bertocci G**, Pierce MC, Knight A, Pediatric Bed Fall Computer Simulation Model Development And Validation, **1<sup>st</sup> Place Winner of Masters Level Scientific Paper Competition**, *ASME Bioengineering Conference*, Amelia Island, FL, June, 2006.
90. Knight A\*, Bertocci G, Pierce MC, Bialczak K, Head Injury Risk Associated With Feet-First Free Falls In Children And Influence Of Impact Surface Type, **2<sup>nd</sup> Place Winner of Masters Level Scientific Paper Competition**, *ASME Bioengineering Conference*, Amelia Island, FL, June, 2006.
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99. Ha D\*, **Bertocci G**, Jategaonkar R, Development of Manual Pediatric Transit Wheelchair Design Guidelines, *RESNA 2005 Conference*, Atlanta, GA June, 2005.
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119. **Bertocci G**, Munin M, Frost K, Burdett R, Breisinger T, Assessment of Muscle Fatigue in Total Hip Replacement (THR) Patients as a Means to Evaluate Rehabilitation Status, *Frontiers in Rehab Research - Best Poster Award*, Pittsburgh, PA, Sept, 2002
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124. Leary A\*, **Bertocci G**, Injury Risk Analysis of a Wheelchair User in a Frontal Impact Motor Vehicle Crash, *RESNA Conference*, Reno, NV, June, 2001.
125. Leary A\*, **Bertocci G**, Design Criteria for Manual Wheelchairs Used as Motor Vehicle Seats Using Computer Simulation, *RESNA Conference*, Reno, NV, June, 2001.
126. Zeltwanger A\*, Wang J, **Bertocci G**, Brienza D, Karg P, Chib V, Repeatability of Determining Effective Young's Modulus of Buttocks Tissue Across Multiple Subjects – **Recipient of Whitaker Scientific Paper Competition Award**, *RESNA Conference*, Reno, NV, June, 2001.
127. Wang J, Brienza D, **Bertocci G**, Karg P, Stress Relaxation Properties of Buttock Soft Tissues: in vivo Indentation Test, *RESNA Conference*, Reno, NV, June, 2001.
128. Souza A\*, **Bertocci G**, Effects of Wheelchair Seating System Energy Absorption on Occupant Submerging Risk in a Frontal Impact Using Computer Simulation, *RESNA Conference*, Reno, NV, June, 2001.
129. Deemer E\*, **Bertocci G**, Pierce MC, Aguel F, Vogeley E, Influence of Accident Environment on Pediatric Fall Biomechanics: A Means to Investigate Potential Child Abuse Cases, *ASME 2001 Bioengineering Conference*, Snowbird, UT, June, 2001.
130. Aguel F\*, **Bertocci G**, Pierce MC, Deemer E, Vogeley E, Comparison of Biomechanical Measures Associated with Common Falsely Reported Scenarios in Child Abuse Using Computer Simulations, *ASME 2001 Bioengineering Conference*, Snowbird, UT, June 2001.
131. Pierce MC, **Bertocci G**, Vogeley E, Deemer E, Aguel F, Szczepanski J, Resultant Fracture Types from Known Injury Mechanisms: Development of a Database for Identification of Potential Child Abuse Fractures, *Pediatric Academic Society Conference*, Baltimore, MD, June, 2001.
132. **Bertocci G**, Pierce MC, Deemer E, Aguel F, Vogeley E, Femur Fractures and Child Abuse: Engineering Principles to Develop a Radiographic Model for Evaluating Bone Strength and Likelihood of Fracture, *ASME 2001 Bioengineering Conference*, Snowbird, UT, June, 2001.
133. Ha D\*, **Bertocci GE**, van Roosmalen L, Karg P, Development of a Static Test Method to Evaluate Crashworthiness of Wheelchair Seating Systems Used as Motor Vehicle Seats, *RESNA Conference*, Reno, NV, June, 2001.
134. Ha D\*, **Bertocci GE**, Evaluation of Wheelchair Sling Seat and Sling Back Crashworthiness, *RESNA Conference*, Reno, NV, June, 2001.
135. van Roosmalen L\*, **Bertocci GE**, Hobson D, Karg P, Usability and Satisfaction of Wheelchair Occupant Restraint Systems Used During Motor Vehicle Transport, *RESNA Conference*, Reno, NV, June, 2001
136. van Roosmalen L\*, **Bertocci GE**, Effect of Wheelchair Integrated Occupant Restraint System on Wheelchair Tiedown and Occupant Restraint Design Characteristics, *RESNA Conference*, Reno, NV, June, 2001.

137. van Roosmalen L\*, **Bertocci GE**, Leary A, Computer Simulation Validation of a Wheelchair Mounted Occupant Restraint System Under Frontal Impact, *RESNA Conference*, Reno, NV, June, 2001.
138. **Bertocci G**, Pierce MC, Aguel F, Deemer E, Vogeley E, Szczepanski J, Energy Associated with Pediatric Accidents Resulting in Femur Fractures: A Means to Differentiate Between Accidents and Abuse, *Pediatric Academic Society Conference*, Baltimore, MD, May, 2001.
139. **Bertocci G**, Deemer E, Pierce MC, Aguel F, Vogeley E, Computer Simulation of Falsely Reported Injury Mechanisms in Child Abuse: Influence of Fall Height and Surface Type, *Pediatric Academic Society Conference*, Baltimore, MD, May, 2001.
140. Wang J, Brienza D, **Bertocci G**, Chib V, Karg P, Influence of Axial Compression Ratio of Buttocks Soft Tissues on Quasi-Linear Viscoelastic (QLV) Modeling Parameters, *World Congress on Medical Physics and Biomedical Engineering Conference*, Chicago, IL, July 2000.
141. Pierce MC, **Bertocci G**, Kambic H, Valdevit A, Prediction of Pediatric Bone Strength Based on Radiographic Geometry and DEXA: An In Vitro Porcine Model for Infant Femur Fracture, *Orthopaedic Research Society*, July 2000.
142. **Bertocci G**, Szobota S, Effect of Wheelchair Seating Stiffness on Occupant Crash Kinematics and Submerging Risk Using Computer Simulation, *RESNA Conference*, Orlando, FL, June, 2000.
143. Ha D\*, **Bertocci G**, Deemer E, Roosmalen L, Karg P, Evaluation of Wheelchair Seating System Crashworthiness – Wheelchair Back Surfaces and Attachment Hardware, *RESNA Conference*, Orlando, FL, June, 2000.
144. Deemer E\*, **Bertocci G**, Ha D, Wheelchair Seating System Crashworthiness: An Evaluation of Seating Attachment Hardware, **Recipient of Whitaker/RESNA Student Scientific Paper Competition Award**, *RESNA Conference*, Orlando, FL, June, 2000.
145. van Roosmalen L\*, **Bertocci G**, Evaluation of Seat Belt Anchorage Strength of a Prototype Wheelchair Integrated Restraint System, *RESNA Conference*, Orlando, FL, June, 2000.
146. Zeltwanger A\*, Wang J, **Bertocci G**, Brienza D, Chib V, Effective Young's Modulus of Buttock Soft Tissue, *RESNA Conference*, Orlando, FL, June, 2000.
147. Wang J, Brienza D, **Bertocci G**, Chib V, Karg P, Yuan Y, Reliability of In-Vivo Test Protocol for Measuring Biomechanical Properties of Soft Buttock Tissue, *RESNA Conference*, Orlando, FL, June, 2000.
148. Frost K\*, Fitzgerald S, **Bertocci G**, Munin M, Burdett R, Functional Status and Well - Being Following Total Hip Replacement Rehabilitation as Measured Using the SF-36, *RESNA Conference*, Orlando, FL, June, 2000.
149. Pierce M, **Bertocci G**, Janosky J, Hani J, Deemer E, Aguel F, Biomechanical and Biological Characterization of Accidental Femoral Fractures in Young Children: Model Development to Aid in Differentiating Accidental and Non-accidental Trauma,

- presented at *Pediatric Academic Societies/American Academy of Pediatrics Conference*, Boston, MA, May 2000.
150. **Bertocci G**, Pierce M, Aguel F, Deemer E, Computer Simulation of Stair Falls for Investigation of a Commonly Stated Injury Mechanism in Child Abuse, *Pediatric Academic Societies/American Academy of Pediatrics Conference*, Boston, MA, May, 2000.
  151. Pierce M, **Bertocci G**, Valdevit A, Kambic H, Szobota S, Evaluation of Dual Energy X-ray Absorptiometry (DXA) and Plain X-rays to Predict Bone Strength Under Different Impact Loading Rates: An Infant Porcine Model for Child Abuse Femur Fractures, *Pediatric Academic Societies/American Academy of Pediatrics Conference*, Boston, MA, May. 2000.
  152. Wang J, **Bertocci G**, Brienza D, Karg P, Yuan Y, In Vivo Characterization of Buttock Soft Tissue Using Quasi-Linear Viscoelastic Modeling, *Proceedings of IEEE EMBS Conference*, Atlanta, GA, Oct 1999.
  153. van Roosmalen L\*, **Bertocci G**, Adaptation of Integrated Restraint Technology for use in Wheelchair Transportation, *IEEE EMBS Conference*, Atlanta, GA, Oct, 1999.
  154. **Bertocci G**, Brienza D, Karg P, Wang J, In Vivo Test Protocol to Determine Soft Buttocks Tissue Relaxation Properties. *Proceedings of ASME Bioengineering Conference*, Big Sky, MT, June, 1999.
  155. van Roosmalen L\*, Ha, D, **Bertocci, G**, Karg, P, Szobota, S, An Evaluation of Wheelchair Seating System Crashworthiness Using Federal Motor Vehicle Safety Standard (FMVSS) 207 Testing, *of RESNA Conference*, Long Beach, CA, June, 1999.
  156. Wang J, Brienza D, Yuan Y, Karg P, **Bertocci G**, Biomechanical Analysis of Buttock Soft Tissue Using Computer Automated Seating System. *Proceedings of IEEE EMBS Conference*, Hong Kong, Nov, 1998.
  157. **Bertocci GE**, Esteireiro J, Cooper RA, Young TM, Thomas C, Testing and Evaluation of Wheelchair Caster Assemblies Subjected to Dynamic Crash Loading. *RESNA Conference*, Minneapolis, MN, June 1998.
  158. Karg P, **Bertocci GE**, Hobson DA, Status of Universal Interface Design Standard for Mobility Device Docking on Vehicles. *RESNA Conference*, Minneapolis, MN, June 1998.
  159. van Roosmalen L\*, **Bertocci GE**, Karg PE, Young TM, Belt Fit Evaluation of Fixed Vehicle Mounted Shoulder Restraint Anchor Across Mixed Occupant Populations. **University of Pittsburgh, Rehabilitation Sciences and Technology Best Student Paper Award**, *RESNA Conference*, Minneapolis, MN, June 1998.
  160. **Bertocci GE**, Development of Transportable Wheelchair Design Criteria Using Computer Crash Simulation. *Proceedings of 1998 Articulated Total Body Modeling Conference*, Dayton, OH, April, 1998.
  161. **Bertocci GE**, Digges K, Hobson D, The Affects of Wheelchair Securement Point Location on Occupant Injury Risk. *RESNA Conference*, Pittsburgh, PA, Jan, 1997. **Recipient of 1997 RESNA/Whitaker Scientific Paper Competition Award.**



162. **Bertocci GE**, Karg PE, Survey of Wheeled Mobility Device Transport Access Characteristics. *RESNA Conference*, Pittsburgh, PA, Jan, 1997.
163. Karg PE, **Bertocci GE**, Universal Interface Hardware Design Standard for Mobility Device Transport Docking Systems. *RESNA Conference*, Pittsburgh, PA, Jan 1997.
164. Hobson DA, **Bertocci GE**, Bernard R, McCartney M, Wheelchair Transit Safety; A Conceptual Case for Low 'g' Securement Approach. *RESNA Conference*, Pittsburgh, PA, Jan 1997.
165. **Bertocci GE**, Hobson DA, The Affects of Securement Point Location on Wheelchair Crash Response. *RESNA Conference*, Salt Lake City, UT 1996.
166. Antaki JF, **Bertocci GE**, Green EC, Nadeem A, Rintoul T, Kormos RL, Griffith BP, A Gait Powered Autologous Battery Charging System for Artificial Organs - **Recipient of the 1995 ASAIO Medforte Innovation Award**, *Proceedings of the 1995 American Society of Artificial Internal Organs Conference*, Chicago, IL, May 1995.
167. **Bertocci GE**, Hobson DA, The Affects of Shoulder Belt Anchor Position on Wheelchair Transportation Safety. *RESNA Conference*, Vancouver, BC, 1995.

\* denotes student first author or post-doctoral fellow mentored by G. Bertocci

\*\* denotes student first author co-mentored by G. Bertocci

#### Book Chapters

**Bertocci G**, Fracture Biomechanics, in *Medical Evidence in Child Maltreatment*, C Jenny (ed), Elsevier, 2010.

Chadwick D, **Bertocci G**, Guenther E, Injuries Associated with Histories of Falls of Infants and Young Children, in *Medical Evidence in Child Maltreatment*, C Jenny (ed), Elsevier, 2010.

**Bertocci G**, Buning ME, Industry Profile – Wheelchair Transportation Safety, in *Wheelchair Industry Profile*, University of Buffalo, June, 2009.

**Bertocci GE**, Wheelchair Transportation Safety, *Spinal Cord Injuries: Management and Rehabilitation*, S Sisto, E Druin, and M Macht-Sliwinski (ed), Feb, 2008.

Karg P, **Bertocci G**, van Roosmalen L, Hobson D, Furui T, Wheelchair Transportation Safety, in *An Introduction to Rehabilitation Engineering*, R Cooper, H Ohnabe, D Hobson (ed), Taylor and Francis, Feb, 2007.

#### Other Publications

**Bertocci G**, Karg P, Power Wheelchair Transportation Considerations - Case Study, *Rehab Directions*, Vol 5, Sept 2016.

Karg P, **Bertocci G**, Mobility Device Transportation Safety: What do I need to know? *Rehab Directions*, Vol 5, Sept 2016.

**Bertocci G**, Guest Editorial – Special Issue on Wheelchair Transportation Safety – Introduction, *Medical Engr & Physics*, Vol 32(3), 229; 2010.

**Bertocci G**, Karg P, Wheelchair Seating and Postural Supports in Transportation, Paraplegia News, Dec, 2008.

Schneider L, Manary M, **Bertocci G**, The Role of Parents and Caregivers in Providing Safe Transportation for Occupants Seated in Wheelchairs, Exceptional Parent Magazine; 100-101, Nov 2007

**Bertocci, GE**, The Influence of Securement Point and Occupant Restraint Anchor Point Location on Wheelchair Frontal Crash Safety, PhD Dissertation, University of Pittsburgh, July 1997.

#### Invited Presentations and Instructional Courses

**Bertocci G**, Application of Injury Biomechanics in Abusive Head Trauma, Army Judge Advocate General Prosecuting Child Abuse Conference, Virtual, March 2021.

**Bertocci G**, The Absence of Injury in Video Recorded Falls Involving Young Children in a Childcare Setting (*Featured Groundbreaking Research Session*), *Shaken Baby Syndrome/Abusive Head Trauma Symposium*, Philadelphia PA. Sept 2020.

**Bertocci G**, The Role of Biomechanics in Distinguishing Between Accidental and Abusive Injury in Children, *US Army Prosecuting Child Abuse Course*, Dallas TX. Mar 2020.

**Bertocci G**, Jenny C, Biomechanical Response of the Infant Head to Shaking - An Experimental Investigation, *Shaken Baby Syndrome/Abusive Head Trauma Symposium*, Orlando FL. Sept 2018.

**Bertocci G**, Don't Fall For It! Biomechanical Compatibility is Key! (keynote), Ann & Robert H. Lurie Children's Hospital of Chicago & Northwestern University Feinberg School of Medicine, 2017 Child Maltreatment Conference, Chicago IL, Oct 2017.

Brown N\*, **Bertocci G**, Marcellin-Little D, Computer Simulations of Stifle Surgeries, Innovations in Veterinary Orthopedic and Trauma Symposium, Boston, MA, Apr 2017.

**Bertocci G**, 3D Printing – Applications in Assistive Technology, 13<sup>th</sup> Annual Summer Institute on Assistive Technology, Kentucky State University, Frankfort KY, June 2016.

**Bertocci G**, Improving the Quality of Life of Humans and Animals through 3D Printed Prosthetics and Assistive Technology, Girls Engineering Time, Louisville KY, Apr 2016.

**Bertocci G**, Koenig S, On the Road to Tenure, Speed Lead Seminar Series, University of Louisville, Louisville KY, Nov 2015.

**Bertocci G**, Development of a Neuromusculoskeletal Computer Simulation Gait Model to Characterize Functional Recovery in Dogs with Intervertebral Disk Herniation, Neuroscience Seminar Series, Texas A & M, College Station TX, Oct 2015.

Frost K, Stillman M, **Bertocci G**, Smalley C, Healthcare for People with Disabilities, Grand Rounds – General Internal Medicine, Baptist Health Hospital, Madisonville, KY, Sept 2015.

**Bertocci G**, Using Computer Simulation to Gain an Improved Understanding of Surgical Stabilization in the Cranial Cruciate Ligament Deficient Stifle, Symposium on Therapeutic Advances in Animal Rehabilitation, American Association of Rehabilitation Veterinarians Lecture Series, Newark, NJ, Apr 2015.

**Bertocci G**, Using Computer Simulation to Gain an Understanding of Orthosis Stabilization in the Cranial Cruciate Ligament Deficient Stifle, Symposium Therapeutic Advances in Animal Rehabilitation, American Association of Rehabilitation Veterinarians Lecture Series, Newark, NJ, Apr 2015.

**Bertocci G**, Development of a Neuromusculoskeletal Computer Simulation Gait Model to Characterize Functional Recovery in Dogs with Intervertebral Disk Herniation, Kentucky Spinal Cord and Head Injury Center Seminar, Louisville, Kentucky, Jan 2015.

**Bertocci G**, Thompson A, Biomechanical Investigation of the Classic Metaphyseal Lesion using a Porcine Model, 14<sup>th</sup> International Conference on Shaken Baby Syndrome and Abusive Head Trauma, Denver CO, Sept 2014.

**Bertocci G**, Advancing Rehabilitation through Computer Simulation, Symposium Therapeutic Advances in Animal Rehabilitation, American Association of Rehabilitation Veterinarians Lecture Series, Newark, NJ, Apr 2014.

**Bertocci G**, Investigation of Cranial Cruciate Ligament Deficiency and Associated Surgical Interventions Using Computer Simulation, Newfoundland Health & Longevity Conference, Lancaster, PA, Apr 2014.

**Bertocci G**, Investigation of Cranial Cruciate Ligament Deficiency and Associated Surgical Interventions Using Computer Simulation, AKC – Canine Health Foundation, St. Louis, MO, Aug 2013.

**Bertocci G**, From Wheelchairs to Cruciate Ligaments, and Humans to Dogs, North Carolina State University – Biomedical Engineering Seminar, Raleigh, NC, March 2012.

**Bertocci G**, Rehabilitation Engineering Summit, Research Topic Panelist, Washington DC, Nov 2011.

**Bertocci G**, Child Abuse Injuries: A Clinically Driven Engineering Approach, Northwestern University and Children's Memorial Hospital - Pediatric Grand Rounds, July 2011.

**Bertocci G**, Frost K, van Roosmalen L, State of Science on Wheeled Mobility Device Transportation Safety in Demand Route and Fixed Route Vehicles, American Public Transportation Association – Bus and Paratransit Conference, Cleveland OH, May 2010.

Buning ME, **Bertocci G**, Wheelchair Transportation Safety Workshop, Kentucky Regional Association for Driver Rehabilitation Specialists Meeting, Louisville, KY, Dec, 2009.

**Bertocci G**, Pierce MC, Musculoskeletal Injuries: Biomechanics, Differential Diagnosis and Clinical Presentation, American Academy of Pediatrics, Intensive Review and Update of Child Abuse Pediatrics – **Training for Board Certification in Child Abuse Medicine**, Portland, Oregon, July, 2009.

Pierce MC, **Bertocci G**, Illustrative Cases – Fractures, American Academy of Pediatrics, Intensive Review and Update of Child Abuse Pediatrics – **Training for Board Certification in Child Abuse Medicine**, Portland, Oregon, July, 2009.

Pierce MC, **Bertocci G**, Fracture Biomechanics in Child Abuse, Helfer Society Annual Meeting, Tuscon, AZ, Sept, 2008.

Buning ME, **Bertocci G**, Wheelchair Transportation Safety Practices, RESNA Conference, Phoenix, AZ, June, 2007.

- Bertocci G**, Pierce MC, Biomechanics Research to Aid in the Detection of Child Abuse, American Academy of Pediatrics Conference – Child Abuse and Neglect Section, Atlanta, GA, Oct, 2006.
- Pierce MC, **Bertocci G**, Fractures in Children: Abuse or Accident, American Academy of Pediatrics Conference – Child Abuse and Neglect Section, Atlanta, GA, Oct, 2006.
- Bertocci G**, Biomechanics Research to Aid in the Detection of Child Abuse, Shaken Baby Syndrome Conference, Park City, UT, Sept, 2006.
- Bertocci G**, A Child Abuse Investigation: Biomechanical Assessment of a Fall – United Kingdom Court of Appeals, Shaken Baby Syndrome Conference Park City, UT, Sept, 2006.
- Bertocci G**, Biomechanics Research to Aid in the Detection of Child Abuse, Cabinet for Health and Family Services – Office of General Counsel, Frankfort, KY, April 2006.
- Bertocci G**, Injury Risk Assessment and Prevention Laboratory Research, Pi Tau Sigma Honorary Engineering Society Annual Inductees Meeting, University of Louisville, Louisville, KY, March 2006.
- Bialczak K\*, **Bertocci G**, Pierce MC, Knight A, Pediatric Bed Fall Computer Simulation Model Development And Validation, University of Louisville ASME and ASHRAE Local Chapter Meeting, Louisville, KY, March 2006.
- Knight A\*, **Bertocci G**, Pierce MC, Bialczak K, Head Injury Risk Associated With Feet-First Free Falls In Children And Influence Of Impact Surface Type, University of Louisville ASME and ASHRAE Local Chapter Meeting, Louisville, KY, March 2006. – **Winner ASME-ASHRAE Professional Section Award**
- Bialczak K\*, **Bertocci G**, Pierce MC, Knight A, Pediatric Bed Fall Computer Simulation Model Development And Validation, University of Louisville Pediatric Research Luncheon, Louisville, KY, March 2006.
- Knight A\*, **Bertocci G**, Pierce MC, Bialczak K, Head Injury Risk Associated With Feet-First Free Falls In Children And Influence Of Impact Surface Type, University of Louisville Pediatric Research Luncheon, Louisville, KY, March 2006.
- Bertocci G**, A Child Abuse Investigation: Biomechanical Assessment of a Fall from 9”, Helfer Society Conference, New Paltz, NY, Oct 29, 2005.
- Bertocci G**, Spivack B, A Child Abuse Investigation: Evaluation of Exersaucer Accelerations Attained During Spinning, Helfer Society Conference, New Paltz, NY, Oct 27, 2005.
- Bertocci G**, Biomechanics as an Aid in the Detection of Child Abuse, Biological Basis for Pediatric Practice – Childhood Injury: Keynote Address, Deer Valley, UT, Sept 11, 2005.
- Bertocci G**, Biomechanical Research as an Aid in the Detection of Child Abuse, University of Utah Injury Research Center, Salt Lake City, UT, Sept 9, 2005.
- Bertocci G**, Spivack B, Is It Abuse? A Biomechanical Approach to Identifying Inflicted Injury, Prevent Child Abuse Kentucky, Lexington, KY, Aug 31, 2005.
- Bertocci G**, Buning ME, Wheelchair Transportation Safety, RESNA Conference Instructional Course, Atlanta, GA, June, 2005.

**Bertocci G**, Be A Lifesaver: Save a Child – First Annual Conference; Biomechanics Research Applied to the Detection of Child Abuse, Norton Hospital, Louisville KY, April 14, 2005.

Pierce MC, **Bertocci G**, Assessing Child Physical Abuse Using Biomechanics and Research Pt I & II, Attorney General's 2005 Kentucky Victims Assistance Conference, Louisville, KY, March 29, 2005.

**Bertocci G**, Pierce MC, Biomechanics Applied to the Study of Child Abuse, University of Kentucky Bioengineering Seminar, Lexington, KY, March 14, 2005.

**Bertocci GE**, Wheelchair Seating Systems in Motor Vehicles, Rehab Engineering Research Center on wheelchair Transportation Safety - State of Science Conference, Orlando, FL, Jan, 2005.

Pierce MC, **Bertocci GE**, Distinguishing Between Accidental and Inflicted Injury Using Biomechanics, Johns Hopkins University, Pediatric Grand Rounds, Baltimore, MD, Oct 26, 2004.

**Bertocci GE**, Biomechanics of Pediatric Falls: A Potential Aid in Distinguishing Between Abusive and Non-Abusive Injuries, University of Louisville, Mechanical Engineering Graduate Seminar, Louisville, KY, Oct 5, 2004.

Pierce MC, **Bertocci GE**, Injury Risk Associated with Bed Falls in Children, University of Louisville, Pediatrics Research Conference, Louisville, KY, Sept 21, 2004.

**Bertocci GE**, Buning ME, Wheelchair Transportation Safety Workshop, RESNA Conference, Orlando, FL, June, 2004.

**Bertocci GE**, Biomechanics of Injury in Pediatric Falls, University of Utah, Salt Lake City, UT, Nov 12, 2003.

Pierce MC, **Bertocci GE**, Berger R, Traumatic Abusive Injury in Children, *Presentation to Prince Andrew*, Children's Hospital of Pittsburgh, Pittsburgh, PA, Oct 24, 2003.

**Bertocci GE**, Wheelchairs as Seats in Motor Vehicles, Interagency Committee on Disability Research – Wheeled Mobility and Accessible Transportation Summit, Washington, DC, July 22, 2003

Pierce MC, **Bertocci GE**, Biomechanics and Child Abuse, Bioengineering Seminar, University of Memphis/University of Tennessee, Memphis, TN, April, 2003,.

**Bertocci GE**, Injury Risk Associated with Bed Falls in Children, Children's Hospital of Pittsburgh – Trauma Conference, April 2003, Pittsburgh, PA.

Pierce MC, **Bertocci GE**, Computer Simulation and Child Abuse; A Powerful Tool for Injury Assessment – Grand Rounds, Allegheny General Hospital, Pittsburgh, PA, April 26, 2002.

Pierce MC, **Bertocci GE**, Bioengineering and Child Abuse-Grand Rounds, UPMC Passavant Hospital, Pittsburgh, PA, April, 2002.

**Bertocci GE**, Pierce MC, Traumatic Injury Biomechanics Research In Identifying Child Abuse, Project Medical Education for Legislators, University of Pittsburgh, Pittsburgh, PA, Feb, 2002.

Pierce MC, **Bertocci GE**, Traumatic Injury Biomechanics in Children, University of Pittsburgh Orthopedics Grand Rounds, Pittsburgh, PA, May 21, 2001.

Pierce MC, **Bertocci GE**, Traumatic Injury Biomechanics in Children, Timely Trauma Topics in Nursing, Childrens' Hospital of Pittsburgh, Pittsburgh, PA, April 17, 2001.

**Bertocci GE**, Ulrich P, Plank B, Monaco K, Dinello R, Making Travel Easy and Safe for People with Disabilities, Lifesavers 2000, National Conference on Highway Safety Priorities, Atlanta, GA, March 13, 2000.

Pierce MC, **Bertocci GE**, Biological and Biomechanical Investigation of Accidental Femur Fractures in Children, Pediatric Grand Rounds, Mercy Hospital Health System, Pittsburgh, PA, Feb 1, 2000.

Pierce MC, **Bertocci GE**, Biological and Biomechanical Investigation of Accidental Femur Fractures in Children, Pediatric Grand Rounds, Children's Hospital of Pittsburgh and University of Pittsburgh School of Medicine – Department of Pediatrics, Pittsburgh, PA, Nov 11, 1999.

**Bertocci GE**, Hobson DA, Whelan, T, "Wheelchair Transportation Standards," International Seating Symposium, March, 1999, Orlando, FLA.

**Bertocci GE**, "Factors Influencing Wheelchair Transportation Safety", International Seating Symposiums, 1998, 1997, 1996.

**Bertocci GE**, Hobson DA, "Wheelchair Transportation Safety and Standards Workshop", RESNA Instructional Course, June 1998 & June 1997, Pittsburgh PA & Minneapolis, MN.

**Bertocci GE**, "Assessing Injury Risk of Wheelchair Users in Frontal Motor Vehicle Crashes", National Bioengineering Symposium, Aug, 1997, Seattle, WA.

**Bertocci GE**, "Special Needs in Student Transportation", Pupil Transportation Association of Pa.-25th Anniversary Conference, June, 1996, State College, PA.

Hobson DA, **Bertocci GE**, Karg PE, "Wheelchair Transportation Safety Workshop", Transporting Students with Disabilities Conference, March 5-6, 1996, Birmingham, AL.

Hobson DA, **Bertocci GE**, Karg PE, Strano C, "Wheelchair Transportation Safety Workshop", International Seating Symposium, Jan 22, 1996, Pittsburgh, PA.

**Bertocci GE**, "Wheelchair Transportation Safety", Conference on Transportation Needs of Multiply Challenged Students, April, 1995, State College, PA.

**Bertocci GE**, "Wheelchair Transportation Safety", Allegheny County Transportation Directors Meeting, April, 1995, Pittsburgh, PA.

*\* denotes student or post-doc mentored by G. Bertocci*

### Community Presentations

**Bertocci G**, Animals Need Assistive Technology Too!, Girl Scouts of America, Oct 2010.

**Bertocci G**, Animals Need Assistive Technology Too!, Research Louisville, Louisville Science Center, Oct 2009.

**Bertocci G**, Frost K, Debate on Prop 8 to Ban Gay Marriage, Muhammad Ali Center, March 2009.

**Bertocci G**, Panel on Health Care Diversity, Health Sciences for Human Rights, Feb 2009.

**Bertocci G**, Development of a Low Cost, Adjustable Canine Wheelchair, WAGS - Delta Dog Society Meeting, Louisville, KY, Nov 2008.

**Bertocci G**, Injury Risk Assessment and Prevention Laboratory – Where Engineering Meets Medicine, Louisville Science Center, Nov 2, 2005.

**Bertocci G**, Adventures of a Bioengineer, Research Louisville, Louisville Science Center, Oct 2005.

Camps R\*, Neumann M, **Bertocci G**, Pierce MC, Deemer E, Computer Simulation of an 12-Month Anthropomorphic Test Dummy (ATD) in Free Fall, Youth in Engineering and Science Expo 2005, Detroit, MI, Oct 2005.

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*\* denotes student advised by G. Bertocci*

### **Grants and Contracts**

#### Externally Funded – Principal Investigator or Co-Principal Investigator

Sep 2020-Aug 2024, An Injury Plausibility Assessment Model for Differentiating Abusive from Accidental Fractures in Young Children, NIH #R01HD102428, \$2,766,618, Role: Multiple Principal Investigator (w MC Pierce).

Jan 2020-Dec 2022, Development of a Probability Model to Predict Head Injury Risk in Pediatric Falls, NIJ #2019-DU-BX-0029, \$636,419, Role: Principal Investigator (MPI - MC Pierce).

Jun 2020-May 2023, Differentiating Abuse from Accident in Young Children with Osteogenesis Imperfecta: Biomechanical Assessment of Fracture Risk (PhD Fellowship), NIJ # 2019-R2-CX-0038, \$142,957, Role: Faculty Mentor (with A Thompson).

Jan 2018-Sep 2020, Biomechanical Characterization of Video Recorded Short Distance Falls in Children, NIJ #2017-DN-BX-0158, \$599,878, Role: Principal Investigator.

Jan 2016-Dec 2017, Biomechanical Effect of Bone Disorders on Pediatric Femur Fracture Potential, NIJ #2015-DN-BX-K018; \$533,978, Role: Principal Investigator (w/ A Thompson)

Jan 2015-Aug 2017, Development of a Computer Simulation Model to Describe Potential Bruising Patterns Associated with Common Childhood Falls, NIJ #2013-DN-BX-K2006; \$377,187, Role: Principal Investigator

Oct 2014-Oct 2017, Development of a Neuromusculoskeletal Computer Simulation Gait Model to Characterize Functional Recovery in Dogs with Intervertebral Disk Herniation, AKC-Canine Health Foundation; \$12,740, Role: Principal Investigator

Oct 2014-Oct 2017, Describing the Kinetic and Kinematic Recovery of Dachshunds with Spinal Cord Injury, AKC-Canine Health Foundation; \$12,935, Role: Co-Principal Investigator

Apr 2014-Mar 2016, Biomechanical Assessment of Femur Fractures in Pediatric Falls, NIH; \$153,192, Role: Principal Investigator (Multiple PIs with A Thompson)

Oct 2013-Sept 2015, In-Depth Investigation of Wheeled Mobility Device Activities on Para-transit Vehicles, NIDRR; \$218,990, Role: Co-Principal Investigator

Nov 2012-Apr 2014, Biomechanical Evaluation of a Canine Stifle-Stabilizing Orthosis for Cranial Cruciate Ligament Deficiency Using Computer Model Simulated Gait, AKC-Canine Health Foundation; \$12,960, Role: Principal Investigator

Jan 2013-Dec 2014, Evaluation of Canine Stifle Cranial Cruciate Ligament Deficiency Surgical Stabilization Procedures Using a Computer Model, AKC-Canine Health Foundation; \$75,816, Role: Principal Investigator

Oct 2011 to Sept 2013, In-Depth Assessment of Wheelchair Ramp Related Activities on Public Transit Buses, NIDRR, \$200,000, Role: Co-Principle Investigator

Dec 2010 to Mar 2012, Development of A Canine Stifle Computer Model For Evaluation Of Cranial Cruciate Ligament Deficiency, American Kennel Club – Canine Health Foundation, #01533A, \$12,932, Role: Principal Investigator

Oct 2009 to Dec 2013, Development of Scientific and Objective Methods to Detect Physical Child Abuse, Office of Juvenile Justice and Delinquency Programs, #2009-58366-KY-JL; \$500,000, Role: Principal Investigator

Oct 2008 to Dec 2012, Development of a Surrogate Bruising Detection System to Describe Bruising Patterns Associated with Common Childhood Falls, National Institute of Justice #2008-DD-BX-K311; \$357,739, Role: Principal Investigator

Nov 2006 to July 2012, Rehabilitation Engineering Research Center on Wheelchair Transportation Safety, NIDRR; \$4,500,000, Role: Co-Principal Investigator

Jan 2006 to Dec 2007, Development of Transit Wheelchair Design Guidelines for Rear Impact Crashes, Paralyzed Veterans of America Research Foundation; \$150,000, Role: Principal Investigator

Nov 2001 to Oct 2006, Rehabilitation Engineering Research Center on Wheelchair Transportation Safety #H133E010302; NIDRR; \$4,500,000, Role: Principal Investigator through 6/04; Co-Investigator 7/04-10/06

Sept 2001 to Aug 2005, Assessment of Muscle Fatigue in Arthritic Total Hip Replacement Patients as a Means to Evaluate Rehabilitation Status; National Arthritis Foundation; \$105,000 direct, Role: Principal Investigator

Apr 2002 to May 2004, Biomechanical Investigation of Pediatric Accidents Resulting in Humerus Fracture as a Means to Delineate Between Intentional and Unintentional Injuries; NIH-NICHHD; \$134,421, Role: Principal Investigator

Jan 1999 to Dec 2002, Influence of Wheelchair Seat Characteristics/Positioning on Occupant Injury Risk #1927; Paralyzed Veterans of America Spinal Cord Research Foundation; \$216,836. Role: Principal Investigator.

Mar 1999 to Feb 2000, Evaluation of EMG Activity and Muscle Fatigue in Total Hip Replacement Patients; Arthritis Foundation; \$15,000. Role: Principal Investigator.

#### Externally Funded – Co-Investigator

Oct 2016-Oct 2018, Gait Biomechanics in Porcine Spinal Cord Injury Model, Helmsley Society; \$1,000,000, Role: Co-investigator

Aug 2011-Aug 2017, A Bruising Clinical Decision Rule for Differentiating Abusive from Accidental Trauma in Young Children and Infants, NIH R01; \$2,928,630, Role: Co-Investigator (U of L Principal Investigator)



July 2013-June 2014 Characteristics of Long Bone Fractures in Children with Osteopenia, Helfer Society; \$5,000, Role: Mentor

Oct 2010-Apr 2013, Consequences of Wheelchair Tiedown and Occupant Restraint System Practices on Wheelchair Passenger Safety in Fixed-route Transit, NIDRR Switzer Merit Fellowship; \$65,000, Role: Mentor (PI: PhD student advisee Zdravko Salipur)

Dec 2004-June 2006, Crashworthy Wheelchair Caster; NIH STTR 1R41HD047105; \$100,000, Role: Co-investigator (PI: post-doc advisee Linda van Roosmalen)

Sept 2003 to Aug 2006, Investigation of Infant Head Injury Risk in Common Falls Using Experimental and Computational Methods; CDC Center for Injury Risk and Control; \$150,000, Role: Project Principal Investigator; Center Co-investigator

Sept 2003 to Aug 2005, Improving the Biofidelity of the Hybrid III Three Year Old Anthropomorphic Test Dummy for Improved Longbone Fracture Prediction, CDC Center for Injury Risk and Control; \$22,000, Role: Project Co- Principal Investigator (PI: Graduate Student Advisee Ernest Deemer)

Sept 2000 to Sept 2001, Assessment of Muscle Fatigue in Arthritic Total Hip Replacement Patients as a Means to Evaluate Rehabilitation Status; NIH Multipurpose Arthritis and Musculoskeletal Diseases Center; \$60,000 direct, Role: Project Principal Investigator – Center Co-Investigator

May 2000 to April 2003, Predictability of Fracture Loads in Immature Femoral Bone Using Geometric and DEXA Data: A Biomechanical Approach to Investigation of Fractures in Child Abuse; Whitaker Foundation; \$210,000 Role: Co-investigator

Oct 1998 to Sept 2003, Crash Integrity of Wheelchair Seating Systems & A Biomechanical and Biological Approach to Investigation of Fractures Encountered in Child Abuse; Center for Disease Control - Center for Injury Research and Control; \$263,260. Role: Project Principal Investigator – Center Co-Investigator.

Jan 1999 to Dec 2004, Rehabilitation Engineering Research Center (RERC) on Wheeled Mobility HE133005; National Institute on Disability and Rehabilitation Research, US Dept of Education, \$4,500,000. Roles: Project Leader on a) Influence of Dynamic Seating in Children with Extensor Thrust b) Development of a Transport-Safe Injury Prevention Technologies. Co-Investigator on a) Investigation of Soft Tissue Biomechanical Properties in Pressure Ulcer Prevention b) Research Support for the Development of Wheelchair Transportation Standards.

Oct 1997 to March 1999, Development of a Wheelchair Integrated Restraint System, NIH, STTR #R41 HD34976, \$100,000. Role: Co-investigator.

Sept 1994 to July 1998, Rehabilitation Engineering Research Center (RERC) on Wheeled Mobility HE133005; National Institute on Disability and Rehabilitation Research, US Dept of Education, \$3,500,000. Roles: Project Leader on Development of Transport Wheelchair Design Criteria Using Computer Simulation. Co-investigator on a) Development of an Auto-engage Wheelchair Docking System b) Development of Wheelchair Transportation Standards c) An Ultrasound Device for Biomechanical Analysis of Soft Tissue.

May 1997 to Sept 1998, Development of Wheelchair Docking System, NIH-NICHHD STTR R41 HD34641, \$100,000. Role: Co-investigator.

Internally Funded – Principal Investigator

Jan 2019-Dec 2019, Using Machine Learning to Delineate Abusive from Accidental Injuries in Young Children, University of Louisville – Research Initiation Grant; \$10,000, Role: Principal Investigator

Sept 2018-Jan 2019, Development of a Dynamic Stimulating Insole to Facilitate Gait, University of Louisville – NSF i-Corps; \$2,500, Role: Co-Principal Investigator

Jan 2015-Dec 2015, Development of an Immature Porcine Femur Surrogate for Investigation of Fracture Potential, University of Louisville Research Initiation Grant; \$5,000, Role: Co-Principal Investigator

July 2010-Dec 2011, Economic Pressure Ulcer Prevention Support Surface for Human and Veterinary Medicine, University of Louisville Basic Clinical Translation Grant; \$44,024, Role: Principal Investigator

Feb 2009-Jan 2010, Development of a Canine Pressure Ulcer Prevention Garment, University of Louisville Proof of Concept Grant; \$22,355, Role: Principal Investigator

Jan 2005-Dec 2006, Impact of Rehabilitation on Functioning After Total Hip Arthroplasty, University of Louisville Multidisciplinary Research Grant; \$10,000, Role: Principal Investigator

Internally Funded – Co-Investigator

Feb 1999 to Feb 2001, Investigation of Accidental Femur Fractures in Young children: A Biological and Biomechanical Approach; Children’s Hospital of Pittsburgh Start-Up Funds, \$76,304. Role: Co-investigator.

**Technology Disclosures, Patents, Licenses**

2020 Soft Tissue Assessment Device and System, US Patent No. 8,292,830 B2 - Humanetics Corp.

2016 Dynamic Stimulating Insole or Shoe, Research Disclosure No. 17028

2015 Ergonomic Syringe and Adaptor, US Patent No. 9,067,023 B2, Issued June 2015

2013 Ramp Slope Feedback System, US Provisional Patent Application No. 61779660

2012 Ergonomic Syringe and Adaptor, US Patent Application No. 13/676,810

2012 Ramp Slope Feedback System, University of Louisville, Disclosure No. 13024

2012 Soft Tissue Assessment Device and System, US Patent No. 8,292,830 B2

2012 Decubitus Ulcer Prevention Garment System For Dogs, US Patent No. 8,161,916, Issued Apr 2012

2012 Development of a Decubitus Ulcer Early Detection Device, University of Louisville Disclosure No. 12038

2011 Pressure-Relieving Support Surface For Animals, US Patent Application No. US 13/096,586

- 2011 Ergonomic Syringe and Adaptor, US Provisional Patent Application No. 61562167
- 2010 Ergonomic Phlebotomy Syringe for Veterinary Applications, University of Louisville Disclosure No. 11028
- 2010 Canine Pressure Relieving Support Surface, University of Louisville Disclosure No. 10061
- 2009 Decubitus Ulcer Prevention Garment System For Dogs, US Provisional Patent Application No. 61142927
- 2008 Decubitus Ulcer Prevention Garment System For Dogs With Mobility Impairment, University of Louisville Disclosure No. 09034
- 2008 Soft Tissue Assessment Device and System, International Patent Application No. WO 2008/153706
- 2008 Soft Tissue Assessment Device and System, US Patent Application No 60/931,203
- 2007 Development of a Cost Effective Canine Wheelchair, University of Louisville Disclosure No. 080007
- 2007 Soft Tissue Assessment Device and System, US Provisional Patent Application No. 60/931,203

### **Theses and Dissertations Directed**

#### University of Louisville

Anya Trell: Title to be determined. (co-mentored w/D Howland)

Keyonna McKinsey: Development of a Parametric Femur Model to Investigate Influence of Pediatric Bone Health on Fracture Risk, PhD, Bioengineering, estimated 2021. (co-mentored w/A Thompson)

Danielle Cory: Biomechanics of Video Recorded Falls in a Childcare Setting, MEng, estimated Apr 2020. (co-mentored w A Thompson)

Khalil Damak: Predictive Analytic Model Delineating Child Abuse from Accident, MEng, Computer Engineering and Computer Science, Dec 2019. (co-mentored w/Olfa Nasrouri)

Bret Hilt: Head Acceleration in Falls involving Young Children, MEng, Bioengineering, Dec 2018.

Elizabeth Ehlman: Design and Development of a Dynamic Stimulating Insole, MEng, Bioengineering, estimated Aug 2020. (co-mentored w/Dena Howland)

Matthew Daunis: Biomechanics of Enhanced Strength Training, PhD, Mechanical Engineering, estimated 2019.

Keyonna McKinsey: Finite Element Model of Pediatric Femur Loading Associated with Household Falls, MEng, Bioengineering, May 2018. **Mickey R Wilhelm Achievement Award** (co-mentored w/Angela Thompson)

Marie Riggs: Assessment of Endoscopic Closure Device Failures, PhD, Mechanical Engineering, Dec 2017.

Benjamin Cahill: Design and Development of a 3D Printed Feline Thoracic Limb Prosthesis, MEng, Bioengineering, Dec 2016.

Greg States: Development of an OpenSim Model Describing Spinal Cord Injury Recovery in Chondrodystrophoid Dogs, MEng, Bioengineering, May 2016.

Raymond D'Souza: Development of a Surrogate Bruising Detection System to Describe Potential Bruising Patterns Associated with Common Childhood Falls, PhD, Mechanical Engineering, May 2015.

Zdravko Salipur: Consequences of Wheelchair Tiedown and Occupant Restraint System Practices on Wheelchair Passenger Safety in Fixed-Route Transit, PhD, Mechanical Engineering, Apr 2013.

Nathan Brown: Development of a Canine Pelvic Limb Computer Simulation Model to Investigate Cranial Cruciate Ligament Rupture and Surgical Management, PhD, Mechanical Engineering, Dec 2012.

Angela Knight: Investigation of Head and Neck Injury Risk Associated with Free Falls in 12 Month Old Children, PhD, Mechanical Engineering, April 2011.

April White: Assessment of Canine Wheelchair Propulsion Kinematics, MEng, Mechanical Engineering, incomplete, 2009-2010.

Kyle Bialczak: Joint Kinematics During Aquatic and Land Treadmill Therapy in Dogs that Have Undergone Surgical Repair of the Cranial Cruciate Ligament, MEng, Mechanical Engineering, incomplete, 2006-2007.

Nathan Brown: Investigation of Canine Stifle Joint Biomechanics, MEng, Mechanical Engineering, defended July, 2009, graduation Dec, 2009.

Sheryll Sisson: Investigation of Wheelchair Ingress/Egress Activities on Large Accessible Transit Vehicles and Evaluation of ADA Ramp Guidelines for Improved Ramp Safety and Usability, MEng, Mechanical Engineering, defended Sept, 2008; graduation Apr, 2009.

Edward Fowler: Design, Analysis and Development of Cost Effective Canine Wheelchairs, MEng, Mechanical Engineering, defended Aug, 2008; graduation Dec, 2008.

Raymond D'Souza: Employing Computer Simulation in the Design And Analysis of an Energy Absorbing Wheelchair Caster, MS, Mechanical Engineering, defended Aug, 2008; graduation Dec, 2008.

Zdravko Salipur: Rear Impact Crashworthiness of a Manual WC19 Wheelchair Occupied by a 50<sup>th</sup> Percentile Anthropomorphic Test Device, defended July, 2008; graduation Dec, 2008.

Angela Knight: Investigation of Head and Neck Injury Risk Associated with Short-Distance Falls in 12 Month Old Children, MEng, Mechanical Engineering, April, 2007.

Ernest Deemer: Development of a Biofidelic 3-Year-Old Anthropomorphic Test Device, PhD, Mechanical Engineering, 2001-2005, incomplete.

#### University of Pittsburgh

Susan Fuhrman: Pediatric Wheelchair and Headrest Design Guidelines and the Effect of Headrests on Relative Injury Risk under Rear Impact Conditions, (role: co-director), PhD, Health and Rehabilitation Science, Dec, 2008.

Dongran Ha: Pediatric Wheelchair Transportation Safety: Transit Manual Wheelchair Design Guidelines and Injury Risk of 6-year-old Children in a Frontal Motor Vehicle Impact, PhD, Health and Rehabilitation Science, 2004.

Linda van Roosmalen: Wheelchair Integrated Occupant Restraint System Feasibility in Frontal Impact, PhD, Health and Rehabilitation Science, 2001.

Fernando Aguel: Development of an In-Vivo Immature Animal Model for Predicting Pediatric Femur Fracture Strength, MS, Bioengineering, 2004.

Ernest Deemer: Influence of Accident Environment on Pediatric Fall Biomechanics Computer Simulation as a Tool for Identification of Child Abuse, MS, Bioengineering, 2001.

Alex Leary: Injury Risk Analysis and Design Criteria for Manual Wheelchairs in Frontal Impacts, MS, Bioengineering, 2001.

Dongran Ha: Development of Test Methods for Wheelchair Seating Systems Used as Motor Vehicles Seats and Evaluation of Wheelchair Seating System Crashworthiness, MS, Rehabilitation Science and Technology, 2000.

## **Theses and Dissertation Committees**

### University of Louisville

Winston Rauch, MEng, Development of a Pediatric Treadmill for Locomotor Training, Bioengineering, estimated Fall 2018.

Kimberly Cheffer, PhD, Anatomical Science and Neurobiology, estimated Fall 2019.

Jeff Borden: Time Course of Mechanical Properties of a Bone Graft Substitute Used to Fill a Drill-Hole Defect: a Micro-CT and Micro-FEA Study, PhD, Mechanical Engineering, estimated Fall 2017.

Nicole Knapp: Foot Strike Patterns and Body Alignment Effects on Muscle Activity During Running, MEng, Bioengineering, May 2016.

David Alston: Development of an Application for Patient-Centered Dementia Care, MEng, Bioengineering, May 2014.

Erik Seibt: Force Sensing Glove For Quantification Of Joint Torques During Stretching After Spinal Cord Injury In The Rat Model, MEng, Bioengineering, May 2013.

Indira Sunil: Bed and Couch Falls in Young Children and the Spectrum of Injuries: A Retrospective Review, MS, Clinical Research Epidemiology and Statistics, Dec, 2009.

Sai Yalla: Determination Of Failure Thresholds Limits Of The Human Thoracolumbar Spine Subjected To Cyclic Loading, PhD, Industrial Engineering, Dec, 2009.

Scott Warrington: Relationship Between Jumping Biomechanics and Ankle Injury Risk: A Prospective Study of Division 1 College Athletes, MS, Mechanical Engineering, Dec, 2006.

### University of Pittsburgh

Dalthea Brown: Dynamic Wheelchair Seating for Individuals with Fluctuating Muscle Tone, PhD, Health and Rehabilitation Science, incomplete Dec, 2009.

Catherine Armstrong: Real-World Wheelchair Transportation Safety: A Study of Wheelchair User Attitudes, Knowledge, and Behavior When Riding Fixed Route Transportation, MS, Rehabilitation Science and Technology, 2004.

Ryan Costic: Functional Evaluation of the Intact, Injured and Reconstructed Acromioclavicular Joint, MS, Bioengineering, 2003.

Rakie Cham: Biomechanics of Slips and Falls, PhD, Bioengineering, 2000.

Mary Jo Geyer: Relationships Between Computed Tomography and Ultrasound Indentations Testing in Characterizing Tissue Fibrosis Associated with Chronic Venous Disease, PhD, Health and Rehabilitation Science, 2001.

Thomas O'Connor: Investigating Exercise for Manual Wheelchair Users With and Without Video Game Play Using the GAME (Wheels) System, PhD, Health and Rehabilitation Science, 2001.

Jue Wang: Development of a Compound Ultrasonic Device and In-Vivo Biomechanical Assessment of Buttock Soft Tissue, PhD, Health and Rehabilitation Science, 2001.

#### Other Universities

Ryan Camps: Computer Simulation of a Pediatric Free Fall, MS, Bioengineering, Michigan Technical University, incomplete.

### III. TEACHING

#### **Courses Taught at the University of Louisville**

- ME 675: Rehabilitation Engineering (Primary Professor)
- BE 658: Rehabilitation Engineering (Primary Professor)
- BE 639: Injury Biomechanics (Primary Professor)
- ME 639: Injury Biomechanics (Primary Professor)
- BE 480: Medical Device Design (Lecture on Wheelchairs)
- BE 423: Bioengineering Measurements (Lecture and Lab on Head Injury Biomechanics)
- BE 101: Intro to Bioengineering (Lecture on Injury Biomechanics)
- BE 102: Intro to Bioengineering (Lecture on Injury Biomechanics)

#### **Curriculum Development at the University of Louisville**

BE 648 & ME 648 Rehabilitation Engineering – Fully developed this course which is an elective offering in Bioengineering and Mechanical Engineering graduate programs.

BE 639 & ME 639 Injury Biomechanics – Fully developed this course which is an elective offering in the Bioengineering and Mechanical Engineering graduate programs.

### **Courses Taught at the University of Pittsburgh**

- HRS 3704: Injury Prevention in Wheelchair Transportation (Primary Professor)  
HRS 2706: Rehabilitation Biomechanics (Primary Professor)  
HRS 2703: Rehabilitation Engineering Design (Primary Professor)  
HRS 2704: Rehabilitation Engineering and Assistive Technology (Wheelchair Transportation and Crash Safety Section)

### **Curriculum Development at the University of Pittsburgh**

HRS 3704 Injury Prevention in Wheelchair Transportation – Fully developed this course which was offered in the Rehabilitation Science MS program, the Health and Rehabilitation Sciences PhD program, and the Bioengineering graduate programs.

HRS 2706 Rehabilitation Biomechanics – Developed this course in conjunction with Dr. Ray Burdett which was offered in the Rehabilitation Science MS program, the Health and Rehabilitation Sciences PhD program, and the Bioengineering graduate programs.

HRS 2703 Rehabilitation Engineering Design – Redesigned this course which was offered in the Rehabilitation Science MS program, the Health and Rehabilitation Sciences PhD program.

### **Non-Thesis Structured Research Projects Supervised**

#### University of Louisville

Anthony Armango, Musculoskeletal Modeling of Muscle Activation in Spinal Cord Injured Dogs, Summer 2018.

Stephen Partain, Changes in Muscle Morphology Following Spinal Cord Injury in a Dachshund, Summer 2016.

Jessica McQuaide, Development of a Program to Analyze Inertial Measurement Unit Data during Quadruped Gait, Summer 2015. – ***Bennett M. Brigman Award May 2016***

Sally Zimmerman, Development of a MatLab Program to Analyze Hip-Knee-Ankle Sagittal Plane Kinematics, Summer 2013. (co-mentored w/Nathan Brown & Dena Howland)

Amanda Paige, Wheelchair Propulsion Biomechanics During Public Bus Ingress, Summer 2012.

Matthew Dutcher, Development of a Canine Hind Limb Gait Model in OpenSim, MEng, Mechanical Engineering, Spring 2013.

Amanda Paige, Kinematics and Kinetics Associated with Manual Wheelchair Propulsion on Ramps, Summer 2012.

Craig Smalley, Development of a Canine Pressure Ulcer Prevention Garment, MEng, Mechanical Engineering, Spring 2009.

Brian Hoskins, Evaluation of Canine Wheelchair Fatigue Life, MEng, Mechanical Engineering, Spring 2009.

Nadia Bieger, Development of a Canine Wheelchair Fatigue Testing Device, MEng, Mechanical Engineering, Fall 2008.

Aaron Fossaluzza, Development of a Canine Wheelchair Fatigue Testing Device, MEng, Mechanical Engineering, Fall 2008.

Michael Ekbundit, Development of FEA Model of an Immature Piglet Femur Classic Metaphyseal Lesion, MEng, Mechanical Engineering, Spring 2008.

Brian Tems, Computer Simulation of Pediatric Bed Fall, MEng, Mechanical Engineering, Fall 2006.

### **Undergraduate Capstone Design Projects Supervised**

#### University of Louisville

Bret Hilt, Kayla Meiner, Abigail Bridges, Development of a Dynamic Stimulating Insole, Fall 2016.

Josiah Douglas, Jarrod Haskins, Bradley Smith, William Downs, Development of an Ergonomic Phlebotomy Syringe for Veterinary Applications, Spring 2011.

Emily Cox, Joel Graham, Harkina Ranji, Development of a Canine Wheelchair Fatigue Testing Device, Fall 2008.

Brandon Coates, Brian Hoskins, Matt Smith, James Trout, Development of a Basketball Shooting Device for Children with Physical Impairment, Spring 2008.

Damon Stacey, Robert Catlett, Bill Norton, Development of a Basketball Shooting Device for Children with Physical Impairment, Spring 2008.

Edward Fowler, Nadia Bieger, Tim Hollihan, Development of a Cost Effective Canine Wheelchair, Spring 2007.

Angela Knight, Kyle Bialczak, Justin Conway, Richie Gimmel, Development of a Biofidelic Neck for the 12 month old CRABI Anthropomorphic Test Device, Spring 2005.

### **Undergraduate and Graduate Research Experiences Supervised**

#### University of Louisville

Spencer Kriss: Characterization of Skull Fractures in Abused Children, BS Engineering, Washington & Lee University, 2018-2019

Stevan Kriss: Characterization of Rib Fractures in Physically Abused Children, BS Engineering, Washington & Lee University, 2017-2019

Yasmine Frugui: Development of an OpenSim Canine Spinal Cord Injury Model, BS Mechanical Engineering, University of California – Berkley, Summer 2017

Khalil Damak: Predictive Analytic Model Delineating Child Abuse from Accident, BS, Computer Engineering, Tunisia Polytechnic University, Summer 2017 (co-mentored with O. Nasraoui)

Craig Smalley: MEng Summer Research Experience, 2009, Mechanical Engineering

Sheryll Sisson: MEng Co-op, Spring 2007, Mechanical Engineering



Angela Knight: Undergraduate Co-op, Spring 2005, Mechanical Engineering

Kyle Bialczak: Undergraduate Summer Research Experience, 2005, Mechanical Engineering

#### University of Pittsburgh

Christina Wong: Undergraduate Research Experience, 2002, Mechanical Engineering, Carnegie Mellon University.

Andrew Zeltwanger: MS Research Experience, 1999-2001, Bioengineering, University of Pittsburgh.

Stephanie Szobota: Undergraduate Research Experience, 1997-2000, Mechanical Engineering, Carnegie Mellon University.

Jon Evans: MS Research Experience, Spring 1997, Mechanical Engineering

#### **High School Student Research Experiences Supervised**

Bethany Hudson: 3D Printing of Prosthetics, 2018

Spencer Kriss: Characterization of Skull Fractures in Child Abuse, 2017-2018

Sophia Korner: Development of a Haptic Prosthetic Hand, 2016

Diya Mathur: Development of a Haptic Prosthetic Hand, 2016

Stevan Kriss: Characterization of Rib Fractures in Physically Abused Children, 2014-2016

#### **Medical Students and Fellows Research Supervised**

Mark Massi, MD: Scholarly Oversight Committee Member – Fellowship in Child Abuse, Kinematics of Shaking Baby Anthropomorphic Test Device Experiments, Brown University, 2008.

Emily Hemberger: Identification of a Low Risk Zone for Pediatric Buckle Femur Fractures, Summer Research Experience, University of Louisville, 2007.

Emily Hemberger: Identification of a Low Risk Zone for Pediatric Spiral Femur Fractures, Summer Research Experience, University of Louisville, 2006.

#### **Post-Doctoral Fellows/Research Engineers Supervised**

Raymond D'Souza, PhD: 2015-present.

Nathan Brown, PhD: 2013-2021.

Linda van Roosmalen, PhD: Development of a Crashworthy Wheelchair Caster, Rehabilitation Science and Technology, University of Pittsburgh, 2001-2003.

Karen Frost, PhD: Isometric and Isokinetic Strength Following Total Hip Arthroplasty, Rehabilitation Science and Technology, University of Pittsburgh, 2003.

#### **Others Supervised**

Craig Smalley, MEng (Research Engineer): 2009-present

### Student Course Evaluations

#### University of Louisville

Term	Course	Overall Instructor Effectiveness
Spring 2020	BE 639 – Injury Biomech	4.10/5
Spring 2019	BE 639 – Injury Biomech	4.05/5
Fall 2018	BE 658 – Rehab Engr	3.64/5
Spring 2018	BE 639 – Injury Biomech	4.33/5
Fall 2017	BE 658 – Rehab Engr	4.29/5
Fall 2016	BE 658 – Rehab Engr	4.57/5
Spring 2016	BE 639 – Injury Biomech	3.83/5
Fall 2015	BE 658 – Rehab Engr	3.93/5
Fall 2014	BE 658 – Rehab Engr	4.43/5
Spring 2014	BE 639 – Injury Biomech	4.50/5
Fall 2013	BE 658 – Rehab Engr	4.23/5
Spring 2013	ME 639 – Injury Biomech	4.22/5
Fall 2012	BE 658 – Rehab Engr	4.05/5
Fall 2011	ME 675 – Rehab Engr	5.00/5
Fall 2010	ME 675 – Rehab Engr	4.80/5
Spring 2010	ME 675 – Injury Biomech	4.64/5
Fall 2009	ME 675 – Rehab Engr	4.63/5
Spring 2009	ME 675 – Injury Biomech	4.40/5
Fall 2008	ME 675 – Rehab Engr	4.46/5
Spring 2008	ME 675 – Injury Biomech	4.58/5
Spring 2007	ME 675 – Injury Biomech	4.47/5

#### University of Pittsburgh

Term	Course	Overall Instructor Effectiveness
Spring 2001	HRS 2703	3.13/5
Fall 2000	HRS 2706	3.45/5
Spring 1998	HRS 3704	4.11/5

Note: not all course evaluations available from University of Pittsburgh

**Mentored Students and Post-Doctoral Fellows - Recognition and Key Accomplishments** – (also see peer-reviewed journal papers marked \* indicating first-authored student publications mentored)

*Keyonna McKinsey: (University of Louisville PhD Student)*

***National Institute of Justice - PhD Fellowship Award - 2020***

*Bret Hilt: (University of Louisville MEng Student)*

**Joseph Henry Award in Translational Bioengineering - 2019**

*Keyonna McKinsey: (University of Louisville MEng Student)*

**Mickey R. Wilhelm Achievement Award - 2018**

*Jessica McQuaide: (University of Louisville MEng Student)*

**Bennett M. Brigman Award - 2016**

*Greg States: (University of Louisville MEng Student)*

**Bioengineering Department Alumni Award - 2015**

*Stevan Kriss: (High School Student)*

Google International Science Fair – Incidence and Location of Abusive Skeletal Injuries in Infants and Children: Does Perpetrator Handedness Matter? **Top 30 Finalist in the Americas and Top 100 Finalist Worldwide - 2016**

*Nathan Brown: (University of Louisville MEng and PhD Student, Post-Doctoral Fellow)*

Brown N – 6 first-authored peer-reviewed journal papers

Brown N – **Grosscurth University PhD Fellowship Award - 2009**

Brown N – **Outstanding Speed School Student Award – Dec, 2009**

Brown N, Bertocci G, Marcellin-Little D, Development of a Canine Stifle Computer Model to Investigate Cranial Cruciate Ligament Deficiency, **1st Place Winner – MS/PhD Mechanical Engineering Category**, Engineering Expo, Louisville KY, March 2009.

Brown N, **Dean's Citation Award**, 2013.

*Angela Knight Thompson: (University of Louisville MEng and PhD Student)*

Knight Thompson A – 7 first-authored peer-reviewed journal papers

Knight A – **Grosscurth University PhD Fellowship Award - 2006**

Knight A, Bertocci G, Pierce MC, Bialczak K, Head Injury Risk Associated With Feet-First Free Falls In Children And Influence of Impact Surface Type, **2<sup>nd</sup> Place Winner of Masters Level Scientific Paper Competition**, ASME Bioengineering Conference, Amelia Island, Fla, June, 2006.

Knight A, Bertocci G, Pierce MC, Bialczak K, Head Injury Risk Associated With Feet-First Free Falls In Children And Influence Of Impact Surface Type, University of Louisville ASME and ASHRAE Local Chapter Meeting, March 2006 – **Winner ASME-ASHRAE Professional Section Award**

Knight A, Bertocci G, Pierce MC, Bialczak K, Head Injury Risk Associated With Feet-First Free Falls In Children And Influence Of Impact Surface Type, University of Louisville E-Expo, March 2006 – **2<sup>nd</sup> Place Poster Winner, Mechanical Engineering Category**

*Zdravko Salipur: (University of Louisville MEng and PhD Student)*

Salipur Z – 4 first-authored peer-reviewed journal papers

Salipur Z – ASME Regional Meeting – **2<sup>nd</sup> Place Presentation Winner** - 2012

Salipur Z – **ASME National Rothermel Graduate Scholarship** – 2006

Salipur Z – **University of Louisville, Grosscurth PhD Fellowship** – 2007

Salipur Z, Bertocci G, Manary M, Ritchie N, Wheelchair Tiedown and Occupant Restraint System Loading Associated with an Adult Manual ANSI WC19 Transit Wheelchair with a Seated 50th percentile ATD Exposed to Rear Impact, **Winner Paralyzed Veteran's of America Student Scientific Paper Competition**, RESNA Conference, Phoenix, Arizona, June 2007.

Salipur Z - **ASME National Parsons PhD Scholarship** – 2007

Salipur Z, Bertocci G, Development and Validation of Rear Impact Computer Simulation Model of an Adult Manual Transit Wheelchair with a Seated Occupant, **Honorable Mention – PhD Level**, University of Louisville, *Engineering Expo*, Louisville, KY, March 2008.

Salipur Z - **Nat'l Institute of Disabilities and Rehab Research (NIDRR) Switzer Doctoral Fellowship Grant (CFDA # 84.133F-1)**, Consequences of Four-Point, Strap-Type Wheelchair Tiedown and Occupant Restraint System Practices on Wheelchair Passenger Safety in Fixed-Route Transit, 2010-2013.

Salipur Z - Dean's Citation Award, 2013.

*Raymond D'Souza: (University of Louisville MS and PhD Student, Post-Doctoral Fellow)*

D'Souza R – Dynamic Stimulating Insole or Shoe Research Disclosure - 2016

D'Souza R – 4 first-authored peer-reviewed journal papers

D'Souza R, Bertocci G - 8<sup>th</sup> KY Innovation Entrepreneurship Conference – **1<sup>st</sup> Place Winner**, Louisville, KY, June 2012

D'Souza R, Bertocci G – University of Louisville, **E-Expo Graduate Student Best Poster** - 2012

D'Souza R - **University of Louisville, PhD Fellowship** – 2007

D'Souza R, Bertocci G, Wheelchair Seat Loading Associated with a Motor Vehicle Frontal Impact, **1<sup>st</sup> Place Winner – MS/PhD Mechanical Engineering Category**, Engineering Expo, Louisville Ky, March 2007.

*Sheryll Sison: (University of Louisville MEng Student)*

Sison S, Knight A, Bertocci G, Assessing Kinematics of Pediatric Falls Using an Anthropomorphic Test Device, **IBM/Rockwell Collegiate Poster Competition Finalist**, *Society of Women's Engineers Conference*, Nashville, TN, Oct 2007.

Sison S, Frost K, Bertocci G, Wheelchair Ingress/Egress Activities in Large Accessible Transit Vehicles, **Honorable Mention Paralyzed Veteran's of America Student Scientific Paper Competition**, RESNA Conference, Washington DC, June 2008.

*Kyle Bialczak: (University of Louisville MEng Student)*

Bialczak K, Bertocci G, Pierce MC, Knight A, Pediatric Bed Fall Computer Simulation Model Development And Validation, **1st Place Winner of Masters Level Scientific Paper Competition**, ASME Bioengineering Conference, Amelia Island, FL, June, 2006.

*Susan Fuhrman: (co-mentored University of Pittsburgh PhD student)*

Fuhrman S, Karg P, Bertocci G, Characterization of Pediatric Wheelchair Kinematics and WTORS Loading During Rear Impact – **Winner Of Paralyzed Veteran's of America Student Scientific Paper Competition**, RESNA 2006 Conference Proceedings, Atlanta GA, June 2006.

Fuhrman S, Karg T, Bertocci G, Effect of Wheelchair Headrest Use During Rear Impact on Pediatric Head and Neck Injury Risk Outcomes - **Honorable Mention Paralyzed Veteran's of America Student Scientific Paper Competition**, RESNA Conference, Phoenix, Arizona, June 2007.

*Emily Hembergers: (University of Louisville Medical Student)*

Hemberger E, Bertocci G, Frost K, Pierce MC, Identification of a Low Risk Zone for Pediatric Spiral Femur Fractures, University of Louisville, *Research Louisville*, **Engineering Collaboration Award – 2<sup>nd</sup> Place**, Oct 2006.

Hembergers E, Bertocci G, Frost K, Pierce MC, Identification of a Low Risk Zone for Pediatric Buckle Femur Fractures, **Dean's Special Commendation Award**, University of Louisville, *Research Louisville*, Louisville, KY, Oct 2007.

*Ernest Deemer: (University of Louisville PhD Student and University of Pittsburgh MS Student)*

Deemer E, Bertocci GE, Pierce MC, Aguel F, Janosky J, Vogeley E, Influence of Wet Surfaces and Fall Height on Pediatric Injury Risk in Feet First Freefalls as Predicted Using a Test Dummy, **Medical Engr and Physics, Vol 27, 2005.**

Deemer E, Bertocci G, Pierce MC, Humerus Loading Associated with Bed Falls, **Winner – Mechanical Engineering**, University of Louisville, *Engineering Expo*, Louisville KY, Feb 2005.

*Dongran Ha: (University of Pittsburgh PhD Student)*

Ha D, Bertocci GE, Deemer E, van Roosmalen L, Karg P, Evaluation of Wheelchair Seating System Crashworthiness: Combination Wheelchair Seat Back Surfaces and Attachment Hardware. **Journal of Rehab Research and Development, Vol 37(5), Oct, 2000.**

Ha D, Bertocci GE, Deemer E, Karg P, Evaluation of Wheelchair Sling Back and Seat Crashworthiness, **Vol 24; Medical Engineering & Physics, Jan, 2002.**

Ha D, Bertocci G, Injury Risk of a 6 Year Old Wheelchair Seated Occupant in a Frontal Motor Vehicle Impact – Sled Testing Analysis, ***Medical Engr and Physics***, Vol 29, Issue 7; 729-738, September 2007.

Ha D, Bertocci G, Jategaonkar R, Development and Validation of a Frontal Impact 6 Yr Old Wheelchair Seated Occupant Computer Model, ***Assistive Technology***, Vol 19.4, Dec 2007.

*Linda van Roosmalen: (University of Pittsburgh PhD Student and Post-Doctoral Fellow)*

vanRoosmalen L, Bertocci GE, Ha D, Karg PE, Proposed Test Method and Evaluation of Wheelchair Seating System Crashworthiness, ***Journal of Rehab Research and Development***, Vol 37(5), Oct 2000.

van Roosmalen L, Bertocci GE, Ha D, Karg P, Feasibility of a Wheelchair Integrated Occupant Restraint Concept in Frontal Impact, ***Medical Engr & Physics***, Vol 23(10), 2001.

van Roosmalen L, Bertocci GE, Hobson D, Karg P, Preliminary Evaluation of Wheelchair Occupant Restraint System Usage in Motor Vehicles, ***Journal of Rehab Research and Development***, Vol 39(1), Jan/Feb 2002.

### **Mentored Junior Faculty – Key Accomplishments**

#### Angela Thompson, PhD

Apr 2014-Mar 2016, Biomechanical Assessment of Femur Fractures in Pediatric Falls, NIH R03 Grant; \$153,192, Multiple PI's: A. Thompson, G. Bertocci

Jan 2016-Dec 2017, Biomechanical Effect of Bone Disorders on Pediatric Femur Fracture Potential, NIJ #2015-DN-BX-K018; \$533,978, Multiple PI's: G. Bertocci, A. Thompson

#### Kristine Fortin, MD

Jan 2014-Dec 2014, Characterizing Pediatric Long Bone Fractures in Osteopenia, Helfer Society; \$5,000, PI: Kristine Fortin

## **IV. SERVICE**

### **Professional Service - External**

#### Editorial Responsibilities

2020-	Editorial Board, Frontiers Bioengineering & Biotechnology
2016-present	Editorial Board, PLOS One
2014-2016	Editorial Board, Journal of Rehabilitation Research & Development
2013-present	Editorial Board, Journal of Bioengineering and Biomedical Sciences

- 2008-2010 Guest Editor, Medical Engineering and Physics Special Issue on Wheelchair Transportation Safety
- 2006-2007 Guest Editor, Assistive Technology Special Issue on Wheelchair Transportation Safety
- 2002-present Editorial Board, Assistive Technology Journal

Manuscript Reviews (select)

- 2018- JAMA Pediatrics
- 2016- Nature
- 2005-present Accident Analysis and Prevention, Reviewer
- 2005-2016 Journal of Rehabilitation Research & Development, Reviewer
- 2005 Transportation Research Record, Journal of the Transportation Research Board, Reviewer
- 2005 International Journal of Vehicle System Modeling and Testing, Reviewer
- 2004 Forensic Science International Journal, Reviewer
- 2002-present Child Abuse & Neglect: The International Journal, Reviewer
- 2002 ASME Journal of Biomechanical Engineering, Reviewer
- 2000-present Medical Engineering and Physics Journal, Reviewer
- 1997-present Department of Veteran's Affairs, Journal of Rehabilitation Research and Development, Reviewer
- 1997-present IEEE Transactions on Rehabilitation Engineering, Reviewer

Grant Proposal Reviews

- 2014-2021 Dept of Veterans Affairs - Rehabilitation Research and Development Service Scientific Merit Review Board: Subcommittee on the Career Development Program, Member
- 2016- NIH Pediatric Traumatic Injury Study Section, Grant Reviewer
- 2014-present NIH Musculoskeletal Rehabilitation Sciences Study Section, Grant Reviewer
- 2014-present National Institute of Justice, Grant Reviewer
- 2013 AKC Canine Health Foundation; Musculoskeletal Study Section, Member
- 2012-2013 NIDRR Rehabilitation Engineering Research Centers, Grant Reviewer
- 2012 Canadian Foundation for Innovation
- 2008 NIDRR Rehabilitation Engineering Research Centers, Grant Reviewer
- 2007 National Science Foundation, Grant Reviewer
- 2006 NIH Musculoskeletal Rehabilitation Sciences Study Section, Grant Reviewer

- 2005 NIH Bioengineering, Technology and Surgical Sciences Study Section, Grant Reviewer
- 2002 Arthritis Foundation - Western Pa. Chapter, Grant Reviewer
- 2000 Paralyzed Veteran's of America – Spinal Cord Research Foundation, Grant Reviewer
- 1997-present NIH STTR/SBIR Clinical Sciences Special Emphasis Section, Rehabilitation, Grant Reviewer

#### Industry Standards and Professional Society Committees

- 2013-2015 RESNA Rehabilitation Engineering/Technology Accreditation Ad-hoc Committee
- 1999-2016 International Standards Organization (ISO), Wheelchair Transportation Standards, Working Group on Seating for Use in Motor Vehicles, Chairperson
- 1998-2016 ISO, Wheelchair Transportation Standards Committee, Member
- 1996-2016 ANSI/RESNA Wheelchair Transportation Standards, Working Group on Seating Crashworthiness, Chairperson

#### Other Professional Service

- 2016 Faculty Tenure Internal Reviewer – University of Louisville
- 2014 Faculty Tenure External Reviewer – University of Illinois
- 2013 Faculty Tenure External Reviewer – The Ohio State University
- 2009-2018 Delta Society Therapy Dog Pet Partner
- 2008 Louisville Veterinary Specialists and Emergency Services Hospital; Canine Wheelchair Service Delivery

### **Professional Service - Internal**

#### University Committees

##### *University of Louisville*

- 2017 Speed School of Engineering, Dean's Search Committee
- 2015-present Graduate Education Committee, Speed School of Engineering
- 2015-present Graduate Coordinator- Bioengineering
- 2016-2018 Bioengineering MS Degree Proposal Development (Lead Author)
- 2015-present Director, Translational Bioengineering PhD Program
- 2013-2015 Bioengineering PhD Program Proposal Development
- 2014-2018 Member, Research and Scholarship Committee, Speed School of Engineering
- 2014-2018 Chair, Engineering Human Health Committee, Speed School of Engineering
- 2014 Chair (ad hoc), Endowed Chair Periodic Review Committee – Bioengineering



2012-present	University Faculty Research Advisory Council
2012	Member, Speed School of Engineering, Strategic Planning Committee Steering Committee
2012	Co-Chair, Speed School of Engineering, Research Strategic Planning Committee
2009-2010	Speed School of Engineering Promotion, Appointment and Tenure Committee
2010	Bioengineering Faculty Search Committee
2007, 2008	Mechanical Engineering Advanced Product Design Faculty Search Committee
2007, 2008	Mechanical Engineering Computational Fluid Dynamics Faculty Search Committee
2007-present	University LGBT Services, Advisory Board
2007	President's Diversity Award Selection Committee
2007	University Search Committee for LGBT Services Director
2006	University Strategic Steering Committee
2005	Bioengineering Chair Search Committee
2005	Bioengineering Faculty Search Committee
2005-present	University Scholars Award Committee
2004-2010	Human Resource Advisory Committee – ex officio member
2004-present	Faculty and Staff for Human Rights – Steering Committee
2004, 2005	Research Louisville Conference – Poster Judge

*University of Pittsburgh*

1997-2004	University of Pittsburgh, School of Health and Rehabilitation Sciences, Planning and Budget Committee Member
1999-2004	University of Pittsburgh, School of Health and Rehabilitation Sciences Appointment, Promotion and Tenure Committee Member
2000-2004	University of Pittsburgh, School of Engineering, Member, Advisory Committee on Diversity
2001-2004	University of Pittsburgh, Institutional Data and Safety Monitoring Board, Member

Other Professional Service

2006-2012	Spalding University; Enabling Technologies, Advisory Board, Member
2005	University of Louisville, Neurology Dept, Movement Disorders Fellows Advisory Board
2000-2004	Children's Hospital of Pittsburgh, Child Advocacy Center, Child Abuse Forensics Team, Member

2000-2002 Spasticity Clinic, University of Pittsburgh Medical Center, Technical Assistant for Neurolytic Procedures and Assessment

Entrepreneurial

2010-present Co-Founder – Bearcat Innovations, LLC – injury biomechanics consulting and expert witness services

Expert Witness Work - Pediatric Injury (fee for service & pro bono)

<b>Expert Witness Record for Select Cases</b>			
<b>Date</b>	<b>Case</b>	<b>Location/Client</b>	<b>Scope/Outcome</b>
Jan 2021	WI v Cox	Wisconsin; Defense	Report; Resolution
Oct 2020	AZ v Bermudez	Arizona; Maricopa Co Attorney's Office - Prosecution	Report; Defense Interview; Testimony
Aug 2020	Adrian v Pride Mobility	Oregon; Plaintiff	Expert; Settlement for Plaintiff
May 2020	AZ v Jackson	Arizona; AZ Attorney General - Prosecution	Testimony - Content Expert; Separation Trial; Dismissed
Sept 2019	Gov't v Garcia	US Army; Ft Bragg NC; Prosecution	Consultant; Court Martialled
Jul 2019	AZ v Meissinger	Arizona; AZ Attorney General - Prosecution	Rebuttal Testimony - Content Expert; Separation Trial
Apr 2018	MA v Robinson	Massachusetts; Prosecution	Expert Report & Testimony; Convicted
Dec 2016	State v Brown	Mississippi; Prosecution	Report & Daubert Hearing; Not Convicted
April 2016	State v West	Missouri; Prosecution	Consultant
Jan 2015	UK v Thomas	United Kingdom; Royal Crown Prosecution	Report & Testimony; Convicted
Nov 2015	State v Sponaule	Kansas; Prosecution	Report; Pled Guilty, Convicted
May 2015	State v Donaldson	New Jersey; Prosecution	Report & Testimony; Convicted
June 2014	State v Jones	Kentucky; Prosecution	Consultant
June 2007	State v Granados	California; Prosecution	Report & Testimony; Convicted
July 2007	Marsh v San Diego	California; Defense	Report
May 2007	State v Mills	Ohio; Prosecution	Consultant

March 2006	State v Taylor	Kentucky; Prosecution	Report & Testimony; Convicted
June 2006	UK v Jeacock	United Kingdom; Royal Crown Prosecution	Report; Witness Statement; Convicted
April 2005	UK v Lazenby	United Kingdom; Royal Crown Prosecution	Report; Witness Statement; Convicted
June 2005	UK v Cherry	United Kingdom; Courts of Appeal; Royal Crown Prosecution	Report; Convicted