Jacqueline G. Paver, Ph.D.

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CURRICULUM VITAE

January 1, 2020

Jacqueline G. Paver, Ph.D.

Areas of Professional Specialization

Biomechanics of Human Injury and Protection
Human Tolerance Testing, Injury Mechanism Evaluation, and Injury Criteria Development
Anthropomorphic Dummies Development, Modeling, and Testing
Biomechanical Analysis of Vehicular, Industrial, and Recreational Accidents
Vehicle Accident Reconstruction
Occupant Kinematics and Dynamics
Computer Simulation and Analysis of Biomechanical Systems
Rollover Crash Testing
Product Defect Analysis
Restraint System Effectiveness
Helmet Design, Testing, and Effectiveness

Education

1985 **Doctor of Philosophy, Biomedical Engineering**
Duke University, Durham, North Carolina
Dissertation: "The Biomechanics of Head and Neck Injury and Protection"

1980 **Master of Science, Biomedical Engineering**
Duke University, Durham, North Carolina

1977 **Bachelor of Science, Engineering**
Harvey Mudd College, Claremont, California

Honors and Awards

1990	Recipient, Arnold W. Siegel Award for best paper presented at the 32nd Stapp Car Crash Conference, Society of Automotive Engineers
1987-1990	Special Project Award Co-lnvestigator, Biomechanical Aspects of Spinal Trauma, Center for Disease Control
1987-1989	Recipient, Biomedical Engineering Award, Biomechanical Models of Spinal Trauma, Whitaker Foundation
1986-1988	Project Award Co-Investigator, Research on Head Protection in the Industrial Environment, Industrial Safety Equipment Association
1987	Project Award Co-Investigator, University Design Competition on Passive Restraints in Automobiles, General Motors and American Society of Engineering Education
1987	Recipient, Research Initiation Program Award, The Kinematics and Dynamics of Manikin Head-Neck Systems, U.S. Air Force Office of Scientific Research
1986	Summer Faculty Research Fellow, U.S. Air Force Office of Scientific Research
1983	Graduate School Fellow, Duke University
1978	Recipient, Research Award, The Biomechanics of Head Protection, Duke University Graduate School
1977	Who's Who in American Universities and Colleges

Professional Affiliations and Activities

President, Board of Directors, Center for Injury Research, 2010-Present

Member, American National Standards Institute Z89 Industrial Headgear Committee, 1987-1989

Member, Board of Directors, Head Protection Research Laboratory, 2008-2009

Member, Society of Automotive Engineers, 1983-Present

Nominated Member, Dummy Testing Equipment Subcommittee, 1988-1998 Nominated Member, Mechanical Human Simulation Subcommittee, 1988-1996

Session Organizer and Chairperson, International Congress and Exposition, Passenger Protection Committee/Automobile Body Activity, 1997

Session Organizer and Chairperson, International Congress and Exposition, Safety Committee/Passenger Car Activity, 1993

Member, American Society of Mechanical Engineers, 1986-Present

Member, Dynamic Rollover Protection (DROP) ARC Linkage Grant Project, 2012-Present

Member, TRB Committee ANB45 (1) Subcommittee Rollover Crashworthiness, 2010-Present, http://anb45.hsrc.unc.edu/rollover/

Member, International Scientific Review & Evaluation Committee (ISREC), 2009

Employment Summary

2017-present **Center for Injury Research, Santa Barbara, California**
President

2008-present **Jacqueline G. Paver, Ph.D., Santa Barbara, California**
Biomechanical Engineer

Performs biomechanical analyses of vehicular, industrial, and recreational accidents and provides expert testimony in deposition, arbitration, and trial.

Performs biomechanical analyses of injuries predicted by full-scale crash testing.

1994-2008 **Biodynamics Engineering, Inc., Pacific Palisades, California**
Senior Biomechanical Engineer

Performed biomechanical analyses of vehicular, industrial, and recreational accidents and provides expert testimony in deposition, arbitration, and trial.

Conducted and participated as a volunteer in full-scale car crash tests that address collision severity, vehicle and occupant responses, restraint system effectiveness, and injury potential.

Performed biomechanical analyses of spinal injuries sustained by restrained children in vehicular accidents.

1989-1993 **Failure Analysis Associates, Inc., Menlo Park, California**
Senior Engineer

Performed injury analyses of vehicular, industrial, and recreational accidents.

Conducted biomechanical research on all-terrain vehicle safety, anthropomorphic dummy neck design and testing, and safety of medical products, including intrauterine devices and breast implants.

1986-1989 **Duke University School of Engineering, Durham, North Carolina**
Research Assistant Professor

Directed and performed biomechanical research on spinal trauma and head injury and protection.

Developed a proposed standard for lateral head protection of industrial workers.

Lectured in undergraduate and graduate biomechanics courses.

Taught undergraduate electronics courses.

1985-1986 **Duke University School of Engineering, Durham, North Carolina**
Research Associate

Directed and performed biomechanical research on spinal trauma and head injury and protection.

Lectured in undergraduate and graduate biomechanics courses.

Consulting Experience

1980-1987 **Industrial Safety Equipment Association, Arlington, Virginia**
Directed and performed biomechanical head injury, head protection, and spinal trauma research.

1985-1986 **American Edwards Laboratories, California**
Performed mechanical testing of human and animal tendons for prosthetic tissue replacement.

1985 **Allegheney International Exercise Equipment, Lincolnton, North Carolina**
Reviewed biomechanical literature to provide bases for exercise equipment design.

1985 **Triangle Health & Fitness Systems, Research Triangle Park, North Carolina**
Conducted anthropometric studies for the design of a rowing exercise machine.

Publications and Technical Documents

Friedman K, Mattos G, Paver J, *"Potential Effects of Automatic Braking on Accident Fatalities and Serious Injuries,"* Paper #17-0152, The 25th International Technical Conference on the Enhanced Safety of Vehicles, Detroit, Michigan, 5-8 June 2017.

Friedman K, Mattos G, Bui K, Hutchinson J, Jafri A, Paver J, *"Potential Effects of Deceleration Pulse Variations on Injury Measures Computed in Aircraft Seat HIC Analysis Testing,"* SAE Paper #2017-01-2052, April 2017.

Friedman K, Mattos G, Bui K, Hutchinson, Jafri A, Paver J, *"Potential Effects of Friction on Injury Measures Computed in Aircraft Seat HIC Analysis Testing,"* SAE Paper #2017-01-2054, April 2017.

Paver J, Friedman D, Friedman K, *"Methodology Developed for Dynamic Rollover Regulation and Ratings,"* International Crashworthiness Conference, Sarawak, Malaysia, 25-28 August 2014.

Paver J, Friedman D, "*Electronic Crash and Injury Causation Analyses,"* American Association of Forensic Scientists, 66th Annual Scientific Meeting, Seattle, WA, 17-22 February 2014.

Paver J, Friedman D, Jimenez J, *"Correlating Human and Flexible Dummy Head-Neck Injury Performance,"* Paper #13-0282, The 23rd International Technical Conference on the Enhanced Safety of Vehicles, Seoul, Korea, 27-30 May 2013.

Friedman D, Paver J, Jimenez J, *"Electronic Crash, Defect and Causation Analyses,"* Paper #13-0106, The 23rd International Technical Conference on the Enhanced Safety of Vehicles, Seoul, Korea, 27-30 May 2013.

Friedman D. Jimenez J, Paver J, *"Predicting a Vehicle's Dynamic Rollover Injury Potential from Static Measurements,"* Paper #13-0107, The 23rd International Technical Conference on the Enhanced Safety of Vehicles, Seoul, Korea, 27-30 May 2013.

Paver J, Friedman D, *"Is BFD a Hyperflexion Injury or Compression with Localized Bending Injury or Both?"* Paper #2012-111, International Crashworthiness Conference, Milano, Italia, www.bolton.ac.uk/bee/baarg/conferences/icrash2012.aspx, 18-20 July 2012.

Friedman D, Paver J, *"Design, Development and Validation of a Rollover Dummy and Injury Measures,"* Paper #2012-110, International Crashworthiness Conference, Milano, Italia, www.bolton.ac.uk/bee/baarg/conferences/icrash2012.aspx, 18-20 July 2012.

Friedman D, Paver J, Shipp C, *"Jordan Rollover System Test Results,"* Paper #2012-112, International Crashworthiness Conference, Milano, Italy, www.bolton.ac.uk/bee/baarg/ conferences/icrash2012.aspx, 18-20 July 2012.

Friedman D, Rico D, Mattos G, Paver J, *"Predicting and Verifying Dynamic Occupant Protection,"* Paper #11-0090, The 22nd International Technical Conference on the Enhanced Safety of Vehicles, Washington, D.C., 13-16 June 2011.

Friedman D, Mattos G, Paver J, *"The Development of a Dynamic Rollover Rating Test,"* Paper #11-0405, The 22nd International Technical Conference on the Enhanced Safety of Vehicles, Washington, D.C., 13-16 June 2011.

Bozzini S, Jimenez J, Mattos G, Grzebieta R, Paver J, *"Commercial, Police, and Military Vehicle Rollover Protection and Evaluating the Effectiveness of Geometry and Retrofit Rollover Testing,"* International Crashworthiness Conference, Washington D.C., 2010.

Paver JG, Friedman D, Caplinger J, *"Rollover Roof Crush and Speed as Measures of Injury Potential vs. the Hybrid III Dummy,"* International Crashworthiness Conference, Washington D.C., 2010.

Friedman D, Bozzini S, Paver J, *"Status of Comparative Dynamic Rollover Compliance Research and Testing,"* Paper #2010-059, International Crashworthiness Conference, Washington D.C., 2010.

Friedman D, Mattos G, Paver J, *"Characterizing the Injury Potential of a Real World Rollover,"* Paper #2010-058, International Crashworthiness Conference, Washington D.C., 2010.

Paver J, Caplinger J, Mattos G, Friedman D, *"The Development of IARV's for the Hybrid III Neck Modified for Dynamic Rollover Crash Testing,"* International Crashworthiness Conference, Washington D.C., 2010.

Paver JG, Caplinger J, Mattos G, Friedman D, *"Testing of the Prototype Low-Durometer Hybrid III Neck for Improved Biofidelity*," SBC Paper #2010-19688, ASME Summer Bioengineering Conference, Naples, FL, 16-19 June 2010.

Paver J, Caplinger J, Friedman D, Mattos G, *"An Improved Dummy Neck Assembly for Dynamic Rollover Testing,"* SBC Paper #2010-19656, ASME Summer Bioengineering Conference, Naples, FL, 16-19 June 2010.

Paver J, Caplinger J, Friedman D, Mattos G, *"Testing of the Prototype Low-Durometer Hybrid III Neck for Improved Biofidelity,"* SBC Paper #2010-19688, ASME Summer Bioengineering Conference, Naples, FL, 16-19 June 2010.

Weiss K, Paver J, *"Forensic Examination of an Unwanted Seat Belt Release in a Rollover Collision with Occupant Ejection,"* American Association of Forensic Scientists, 2010.

International Scientific Review & Evaluation Committee (ISREC) Committee, *"Scientific Review & Evaluation of Jordan Rollover System (JRS) Impact Crash Test Device,"* 14 August 2009.

Friedman D, Paver J, Carlin F, *"Hybrid III Correlation with Human Injury Potential in Rollovers,"* ASME Summer Bioengineering Conference, Lake Tahoe, CA, 17-21 June 2009.

Paver JG, Carlin F, Bish J, Caplinger J, "*Development of Rollover Injury Assessment Instrumentation and Criteria,"* 36th International Workshop on Human Subjects for Biomechanical Research, NHTSA, San Antonio, TX, 2 November 2008.

Friedman D, Paver JG, Caplinger J, Carlin F, Rohde D, *"Prediction of Human Neck Injury in Rollovers from Dynamic Tests using the Hybrid III Dummy,"* IMECE Paper #2008-68386, Proceedings of the 2008 International Mechanical Engineering Congress and Exposition, Boston, MA, 2-6 November 2008.

Paver JG, Friedman D, Carlin F, Bish J, Caplinger J, Rohde D, *"Rollover Crash Neck Injury Replication and Injury Potential Assessment,"* IRCOBI Conference Proceedings, September 2008.

Paver JG, Friedman D, Caplinger J, *"Rollover Roof Crush and Speed as Measures of Injury Potential vs. the Hybrid III Dummy,"* International Crashworthiness Conference, July 2008.

Paver JG, *"Identification of Airbag Design Features that Adversely Affect Injury Potential,"* AAFS, Seattle, WA, 2008.

Khadilkar AV, Der Avanessian H, Ward P, Laviano CW, Paver JG, Ward CC, *"Safety Performance Evaluation of Selected Child Safety Seats Under Angled Impacts in Car-To-Car Crash Tests,"* BED-Volume 50, Bioengineering Conference of the American Society of Mechanical Engineers, 2001.

Ward CC, Der Avanessian H, Ward P, Paver JG, *"Investigation of Restraint Function on Male and Female Occupants in Rollover Events,"* SAE Paper #01B-109, International Congress and Exposition, March 2001.

Paver JG, Khadilkar AV, and Ward CC, *"Use of Daily Activity Data to Assess Injury Potential in Low-Speed Motor Vehicle Crashes,"* Advances in Bioengineering, ASME International Mechanical Engineering Congress and Exposition, Anaheim, CA, November 1998.

SAE Hybrid III Dummy Neck Round-Robin Task Group, *"Hybrid III Dummy Neck Round- Robin Testing,"* SAE Paper #971043, International Congress and Exposition, February 1997.

Grewal DS, Paver JG, Khatua TP, *"Simulation of BioSID Head-Neck Motions,"* SAE Paper #940909, Occupant Containment and Methods of Assessing Occupant Protection in the Crash Environment, SP-1041, March 1994.

Kliewer MA, Gray L, Paver JG, Richardson WD, Vogler JB, McElhaney JH, Myers, BS, *"Acute Spinal Ligament Disruption: MR Imaging with Anatomic Correlation,"* Journal of Magnetic Resonance Imaging 3(6):855-861, 1993.

Piziali RL, Ayres TJ, Paver JG, Fowler G, McCarthy RL, *"Investigation of the Net Safety Impact of an Occupant Protection System from All-Terrain Vehicles,"* SAE Paper #930208, International Congress and Exposition, March 1993.

Piziali RL, Paver JG, Merala R, Fries R, Ayers TJ, Fowler G, McCarthy RL, *"Evaluation of an Occupant Protection System for All-Terrain Vehicles,"* ASME #92-WA/SAF-9, Winter Annual Meeting of the American Society of Mechanical Engineers, November 1992.

Myers BS, McElhaney JH, Doherty BJ, Paver JG, Gray L, *"The Role of Torsion in Cervical Spine Trauma,"* Spine 16(8):870-874, August 1991.

Paver JG, Khatua TP, Piziali RL, Whitestone J, Kaleps I, Taylor C, *"The Prediction of Hybrid III Manikin Head-Neck Kinematics and Dynamics,"* SAE Paper #900540, SAE Transactions 99; Vehicle Crashworthiness and Occupant Protection in Frontal Collisions, SP-807, February 1990.

Myers BS, McElhaney JH, Doherty BJ, Paver JG, Nightingale RW, Ladd TP, Gray L, *"Responses of the Human Cervical Spine to Torsion,"* SAE Paper #892437, SAE Transactions 98; Proceedings of the 33rd Stapp Car Crash Conference, October 1989.

McElhaney JH, Doherty BJ, Paver JG, Myers BS, Gray L, *"Flexion, Extension, and Lateral Bending Responses of the Cervical Spine,"* Proceedings of the Conference on Neck injury in Advanced Military Aircraft Environments, AGARD, April 1989.

Gray L, Kliewer MA, Paver JG, McElhaney JH, *"MRI of Experimentally Induced Spinal Injury,"* 74th Scientific Assembly and Annual Meeting of the Radiology Society of North America, 1988.

McElhaney JH, Paver JG, *"Industrial Helmet Design and Testing in the United States,"* Proceedings of the Conference on Protective Equipment, Construction Safety Association of Ontario, Canada, October-November 1988.

McElhaney JH, Doherty BJ, Paver JG, Myers, BS, *"Combined Bending and Axial Loading Responses of the Cervical Spine,"* SAE Paper #881709, SAE Transactions 97; Proceedings of the 32nd Stapp Car Crash Conference, October 1988.

Paver JG, Fishburne B, *"The Prediction of Hybrid II Manikin Head-Neck Kinematics and Dynamics,"* Proceedings of the 25th Annual SAFE Symposium, November 1987.

Paver JG, McElhaney JH, *"Research in Head Protection in the Industrial Environment,"* Final Report, Industrial Safety Equipment Association, October 1987.

Paver JG, Doherty BJ, *"A Computer Simulation of the Hybrid II Manikin Head-Neck System,"* SAFE Journal 17(4), Winter 1987; Proceedings of the 24th Annual SAFE Symposium, December 1986.

Paver JG, Doherty BJ, *"Mathematical Modeling of the Hybrid III Manikin Head-Neck Structure,"* Proceedings of the 6th International Conference on Mathematical Modeling, August 1987.

Paver JG, McElhaney JH, *"The Deployable Crash Pad,"* Final Report, General Motors/American Society of Engineering Education University Design Competition on Passive Restraints in Automobiles, April 1987.

Paver JG, McElhaney JH, *"Research in Head Protection,"* Final Report, Industrial Safety Equipment Association, 1986.

Duclos T, Paver JG, McElhaney JH, Clippinger FW, *"Open and Closed Loop Models of a Prosthetic Sensory Feedback System,"* Proceedings of the International Conference on Systems, Man, and Cybernetics, IEEE, October 1986.

McElhaney JH, Roberts VL, Paver JG, Maxwell GM, *"Chapter 2: Impact Injury of the Head and Spine,"* The Etiology of Trauma to the Cervical Spine, Ewing CL, Thomas DJ, Sances A, Larson SJ, editors, Charles C Thomas Publishers, Springfield, Illinois, 1983.

McElhaney JH, Paver JG, McCrackin HJ, Maxwell GM, *"Cervical Spine Compression Responses,"* SAE Paper #831615, SAE Transactions 92; Proceedings of the 27th Stapp Car Crash Conference, October 1983.

Paver JG, McElhaney JH, *"Selected Bibliography on Head and Neck Injury and Protection,"* Neuroelectric News 10(4)-11(1-3), July 1982-July 1983.