# ERIK D. POWER, P.E.

## Registered Professional Engineer and Fully Accredited Traffic Accident Reconstructionist

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## Education

B.S., Virginia Tech Mechanical Engineering	1995-2000
M.S., Virginia Tech Biomedical Option, Mechanical Engineering Focus: Airbag-Induced Eye Injuries	2000-2001
Doctoral Student, Oregon State University Biomechanics Concentration, Mechanical Engineering Focus: Spine and Intervertebral Disc Biomechanics	2009-
Experience	
Credence Systems Corporation, Beaverton, OR Mechanical Engineer (Co-op) Designed electro-mechanical assemblies	1996-1999
Virginia Tech Industrial Ergonomics Lab, Blacksburg, VA Undergraduate Researcher Analyzed human posture and motion data	2000
Virginia Tech Impact Biomechanics Lab, Blacksburg, VA Research Assistant Conducted injury biomechanics research	2000-2001
National Highway Traffic Safety Administration, Washington, D.C. Biomechanical Engineering Contractor (GESAC, Inc.) Simulated automobile accidents, analyzed predicted injury data	2001-2003
Hayes and Associates, Inc., Corvallis, OR Biomechanical Engineer Consultant in accident reconstruction and injury biomechanics	2003-
Specialized Training	
19th Southern Biomedical Engineering Conference Blacksburg, VA	Apr 2000
MADYMO Introductory Training Detroit, MI	Nov 2000
28th International Workshop on Human Subjects for Biomechanical Research	Nov 2000

Atlanta, GA

44 <sup>th</sup> Stapp Car Crash Conference Atlanta, GA	Nov 2000
25th Annual Meeting of the American Society of Biomechanics San Diego, CA	Aug 2001
29 <sup>th</sup> International Workshop on Human Subjects for Biomechanical Research San Antonio. TX	Nov 2001
45 <sup>th</sup> Stapp Car Crash Conference San Antonio, TX	Nov 2001
30 <sup>th</sup> International Workshop on Human Subjects for Biomechanical Research Ponte Vedra Beach, FL	Nov 2002
46 <sup>th</sup> Stapp Car Crash Conference Ponte Vedra Beach, FL	Nov 2002
Society of Automotive Engineers World Congress Detroit, MI	Mar 2003
Northwestern University – Traffic Accident Reconstruction I Evanston, IL	Apr 2004
ARC-CSI Crash Conference Las Vegas, NV	Jun 2004
FARO – Biomechanics in Vehicle Collisions Eugene, OR	Apr 2005
ARC-CSI Crash Conference Las Vegas, NV	Jun 2005
Association for the Advancement of Automotive Medicine – Injury Scaling Banff, AB	Mar 2006
FARO – Validation of Pedestrian-Bicyclist vs. Vehicle Crash Scene Formulas Salem, OR	Aug 2006
National Transportation Safety Board – Biomechanics of High-Impact Injuries Ashburn, VA	Apr 2007
FARO – Investigation of Water Related Crashes & Incident, Bumper Construction and Energy Efficiency in Low Speed Impacts, Major Crash Analysis, Eugene, OR	Nov 2007
FARO – Accident Reconstruction at Traffic Signal Intersections, Forensic Analysis of Seat Belts & Occupant Kinematics, Hillsboro, OR	May 2008
WATAI – Unique Aspects of Car/Pole Collisions, Automotive Glass Coding, Low Speed Impacts, HID Lamp Exams, Redmond, WA	May 2011
FARO – Advanced Topics of Motor Vehicle vs. Pedestrian Reconstruction Hillsboro, OR	Oct 2011
FARO – Motorcycle Crash Reconstruction & Injury Analysis of Motorcycle Crashes Salem, OR	Feb 2012
Crash Data Retrieval (CDR) Technician Certification Course Clackamas, OR	Apr 2012
FARO – 3D Forensic Animation for Crime & Crash Scene Court Presentations, and Biomechanical Injuries – Planes, Trains & Automobiles, Eugene, OR	Jul 2012
Crash Data Retrieval (CDR) Data Analyst Certification Course Clackamas, OR	Nov 2012
Accessing and Interpreting Heavy Vehicle Event Data Recorders Oxnard, CA	Oct 2017
Northwestern University – Advanced Crash Reconstruction Utilizing Human Factors Evanston, IL	May 2018

#### **Invited Presentations**

The effect of temperature on the in vitro wear and friction of bovine articular cartilage 19th Southern Biomedical Engineering Conference (poster) Blacksburg, VA	Apr 2000
A nonlinear finite element model of the human eye for large deformation loading 25th Annual Meeting of the American Society of Biomechanics San Diego, CA	Aug 2001
A nonlinear finite element model of the human eye to investigate ocular injuries from night vision goggles	Nov 2001
29th International Workshop on Human Subjects for Biomechanical Research San Antonio, TX	
Investigation of ocular injuries from high velocity objects in an automobile collision Society of Automotive Engineers World Congress Detroit, MI	Mar 2002
CSI Corvallis: The Science of Forensics. Sponsored by Oregon State University, Oregon Museum of Science & Industry, and Downtown Corvallis Association Corvallis, OR	Mar 2010
Professional Memberships	
Association for the Advancement of Automotive Medicine (AAAM)	2006-
Forensic Accident Reconstructionists of Oregon (FARO)	2006-
Awards and Certifications	
Out-of-State Scholar scholarship to Virginia Tech	1995-2000
Pratt Fellowship - Virginia Tech Center for Biomedical Engineering	2000-2001
Pratt Fellowship - Virginia Tech Department of Mechanical Engineering	2000-2001
Joseph Haley Writing Award for best paper published in helicopter aviation medicine	2002
Registered Professional Mechanical Engineer, Oregon Certificate #77335PE	2006
Full Accreditation as a Traffic Accident Reconstructionist, ACTAR #1733	2006
Certified Crash Data Retrieval (CDR) Technician, Levels 1 and 2	2012
Certified Crash Data Retrieval (CDR) Data Analyst	2012

#### **Publications**

- 1. Duma, S.M., Power E.D., Stitzel, J.D., Jernigan, M.V., Herring, I.P., Duncan, R.B., Pickett, J.P., and Bass, C.R.: The porcine eye as a surrogate model for the human eye: Anatomical, mechanical, and injury relationships. Proceedings of the 28th international workshop on human subjects for biomechanical research. Atlanta, GA, Nov 2000.
- Power, E.D., Duma, S.M., Stitzel, J.D., Herring, I.P., West, R.L., Bass, C.R., Crowley, J.S., and Brozoski, F.T.: A nonlinear finite element model of the human eye to investigate ocular injuries from night vision goggles. Injury Biomechanics Research: Proceedings of the 29th international workshop, pp. 183-197, 2001.
- Power, E.D., Duma, S.M., Stitzel, J.D., Herring, I.P., West, R.L., Bass, C.R., Crowley, J.S., and Brozoski, F.T.: Computer modeling of airbag induced ocular injuries in pilots wearing night vision goggles: Aviation space and environmental medicine, vol. 73, pp. 1000-1006, 2002.
- 4. Power, E.D., Stitzel, J.D., Duma, S.M., Herring, I.P., and West R.L.: Investigation of ocular injuries from high velocity objects in an automobile collision: SAE transactions: Journal of Passenger Cars, vol. 112, sec. 6, 2002.
- Stitzel, J.D., Power, E.D., Cormier, J.M., Hurst, W.J., Herring, I.P., and Duma, S.M.: Computational modeling and experimental validation of globe deformation due to impact with high speed foam particles. Proceedings of the 1<sup>st</sup> annual center for biomedical engineering symposium, Virginia Tech, Blacksburg, VA, 2002.

- 6. Takhounts, E.G., Eppinger, R.H., Campbell, J.Q., Tannous. R.E., Power, E.D., and Shook, L.S.: On the development of the simon finite element head model. Stapp Car Crash Journal, vol. 47, pp.107-133, 2003.
- 7. Campbell, J.Q., Power, E.D., et al.: Correlation of the simon head finite element model to relative motion of the brain and skull. International congress on sports dynamics proceedings, 2003.
- Takhounts, E., Eppinger, R., Tannous, R., Campbell, J.Q., Power, E., Shook, L., and Hasija, V.: Analysis of 3D rigid body motion using the nine accelerometer array system. Injury Biomechanics Research: Proceedings of the 31st international workshop, 2003.
- 9. Brickman, D.B., Power, E.D., and Hayes, W.C.: Toy asparagus spear risk analysis. Proceedings of ASME international mechanical engineering congress and RD&D expo, Orlando, FL, Nov 2005.
- 10. Hayes, W.C., Erickson, M.S., and Power, E.D.: Forensic injury biomechanics. In: Annual Review of Biomedical Engineering, vol. 9, pp.55-86, Palo Alto, CA, 2007.
- 11. Power, E.D., Bauer, J.J., and Hayes, W.C.: Reconstruction of a shooting incident to determine position of shooter and timing of each shot fired. Annals of Forensic Research and Analysis, 2018 (*submitted*).
- 12. Power, E.D., Beattie, W.C., and Bay, B.K.: Finite element model of a prosthetic intervertebral disc: a parametric study using a hydrogel-foam composite as a nucleus pulposus replacement. Computer Methods in Biomechanics and Biomedical Engineering, 2018 (*submitted*).
- 13. Power, E.D., Lipscomb, K.E., and Soicher, M.A.: Anthropometric modeling in forensics. In: Digital Human Modeling and Posturography. Elsevier S&T Books, New York, 2018 (*submitted*).

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