STEPHANIE PASQUESI

773.636.7322
spasquesi@explico.com

PhD, PE

BIOMECHANICS

EDUCATION

UNIVERSITY OF PENNSYLVANIA

PhD Bioengineering **2016**

UNIVERSITY OF ILLINOIS, URBANA-CHAMPAIGN

BS Mechanical Engineering, *with honors* **2009**

LICENSES & CERTIFICATIONS

Professional Engineer IL

PADI Certified Open Water (#20020C2464) and Altitude (#20020E7567) Diver

AFFILIATIONS

Biomedical Engineering Society
Alpha Omega Epsilon
Tau Beta Pi Honor Society
Pi Tau Sigma Honor Society
SAE International

PROFESSIONAL PROFILE

Dr. Stephanie Pasquesi has a large breadth of experience in translational biomechanics research, applying laboratory studies to clinical observations and applications. She has a background in both bioengineering and mechanical engineering, with expertise in human injury biomechanics and kinematics. Dr. Pasquesi specializes in traumatic brain injury including concussion and pediatric abusive head trauma. At Explico, Dr. Pasquesi evaluates injury mechanisms and injury potential in consumer products-related incidents, recreational and motor vehicle accidents, and a variety of other injury scenarios. Dr. Pasquesi additionally evaluates injuries in the context of the design and performance of various products including protective equipment such as helmets and motor vehicle restraints. She also has experience in design and development of medical devices including orthopedic implants and surgical instruments.

Prior to joining Explico, Dr. Pasquesi worked as a Senior Engineer at Exponent, Inc., performing biomechanical investigations and analyses of injury. She completed her doctoral studies and was a research assistant in the Injury Biomechanics Laboratory at the University of Pennsylvania. Specifically, Dr. Pasquesi investigated the potential for parasagittal bridging vein rupture due to shaking, employing an integrated approach of animal and pediatric cadaveric tissue mechanical testing, in situ and in vivo animal injury models, anthropomorphic test dummy experiments, and computational finite element modeling to identify possible mechanisms for extra-axial hemorrhage (subdural and subarachnoid hematomas). While at the University of Pennsylvania, Dr. Pasquesi was awarded a fellowship from the American Heart Association and co-authored an NIH-funded small project grant.

PASQUES

EXPLICO

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Areas of Expertise

Biomechanics
Traumatic Brain Injury Biomechanics

Experience

Explico
2024 - Present *Managing Engineer*

Independent Biomechanical Engineering Consultant
2022 - 2024 *Consultant*

Exponent, Inc.
2017 - 2022 *Senior Engineer*

MedShape, Inc.
2008 - 2009 *Research and Development Engineer*

Cardinal Health Inc. - V. Mueller Products and Services
2007 *Research and Development Engineer*

Awards and Honors

American Heart Association Pre-Doctoral Fellowship
State of Illinois General Assembly Scholarship

Publications

Guttag M, Kennedy E, George J, Pasquesi S. Evaluation of Head Injury Patterns and Risk Mitigation Strategies Associated with Falls from Playground Equipment. In *ASME International Technical Engineering Congress and Exposition*, American Society of Mechanical Engineers, 2023; 86717: V009T14A015.

Davis M, Mkandawire C, Brown T, and Pasquesi S. (2021). Incidence and Mechanism of Head, Cervical Spine, Lumbar Spine, and Lower Extremity Injuries for Occupants in Low- to Moderate-Speed Frontal Collisions. SAE Technical Paper 2021-01-0902. (Presented at the 2021 SAE World Congress, virtual)

Davis M, Mkandawire C, Brown T, and Pasquesi S. (2021). Incidence and Mechanism of Head, Cervical Spine, Lumbar Spine, and Lower Extremity Injuries for Occupants in Low- to Moderate-Speed Frontal Collisions. SAE Technical Paper 2021-01-0900.

Parenteau C., Campbell I. C., & Pasquesi, S. A. (2020). The Effects of Active and Conventional Head Restraints on Front Seat Occupant Responses in Rear Impacts. SAE Technical Paper 2020-01-1217.

Pasquesi, S. A., Seidi, M., Hajiaghamemar, M., & Margulies, S. S. (2020). Predictions of neonatal porcine bridging vein rupture and extra-axial hemorrhage during rapid head rotations. Journal of the Mechanical Behavior of Biomedical Materials, 103740.

Pasquesi SA, Bruno A, Courtney A, Imler SM, Smedley J, and Prange MT. Risk of Concussion in Low- to Moderate-Speed Frontal and Rear-End Motor Vehicle Collisions Evaluated Using Head Acceleration-Based Metrics. SAE Technical Paper 2019-01-1218, 2019. (Presented at the 2019 SAE World Congress, Detroit, MI).

Courtney A, Campbell IC, Courtney E, and Pasquesi, SA. (2018) Risk of concussion due to head acceleration in rear impact sled tests of passenger automobile seats. Traffic Injury Prevention 19(S2): S133-S135

Pasquesi SA and Margulies SS. Measurement and Finite Element Model Validation of Immature Porcine Brain-Skull Displacement during Rapid Sagittal Head Rotations. Frontiers in Bioengineering and Biotechnology 2018, 6:16.

Pasquesi SA and Margulies SS. Failure and Fatigue Properties of Immature Human and Porcine Parasagittal Bridging Veins. Annals of Biomedical Engineering 2017; 45(8): 1877-1889.

Pasquesi SA, Liu Y, and Margulies SS. Repeated Loading Behavior of Pediatric Porcine Common Carotid Arteries. Journal of Biomechanical Engineering, 2016; 138(12).

Pasquesi SA. Can Vigorous Shaking Cause Extra-Axial Hemorrhage in Newborns? A Detailed Human and Porcine Study. Doctoral Dissertation, University of Pennsylvania, 2016.

PRESENTATIONS

Guttag M, Kennedy E, George J, Pasquesi S. Evaluation of Head Injury Patterns and Risk Mitigation Strategies Associated with Falls from Playground Equipment. American Society of Mechanical Engineers International Mechanical Engineering Congress and Exposition, October 2022, virtual.

Davis M, Mkandawire C, Brown T, and Pasquesi S. Incidence and Mechanism of Head, Cervical Spine, Lumbar Spine and Lower Extremity Injuries for Occupants in Low- to Moderate-Speed Frontal Collisions. Society of Automotive Engineers World Congress, April 2021, virtual.

Davis M, Mkandawire C, Brown T, and Pasquesi S. (2021). Incidence and Mechanism of Head, Cervical Spine, Lumbar Spine, and Lower Extremity Injuries for Occupants in Low- to Moderate-Speed Frontal Collisions. Society of Automotive Engineers World Congress, April 2021, virtual.

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Pasquesi SA, Bruno A, Courtney A, Imler SM, Smedley J, and Prange MT. Risk of Concussion in Low- to Moderate-Speed Frontal and Rear-End Motor Vehicle Collisions Evaluated Using Head Acceleration-Based Metrics. Society of Automotive Engineers World Congress, April 2019, Detroit, MI.

Pasquesi SA and Margulies SS. Implications for Abusive Head Trauma: Bridging Vein Fatigue with Cyclic Loading and Failure Properties. Poster presentation, National Neurotrauma Society Annual Meeting, Lexington, KY, June 2016.

Pasquesi SA and Margulies SS. Rate-Independent and Fatigue Behavior of Porcine Common Carotid Arteries. CNS Injury Conference, University of Pennsylvania, Philadelphia, PA, April 2015.

Pasquesi SA and Margulies SS. Effect of Strain Rate and Cryopreservation Conditions on Elastic Modulus of Veins. Poster presentation, Biomedical Engineering Society Annual Meeting, Seattle, WA, September 2013.

Bradfield C, Sullivan S, Pasquesi S, Margulies SS. Stiffness of infant and toddler age porcine brain tissue subjected to high rotational velocities. 12th U.S. National Congress on Computational Mechanics, Raleigh, NC, July 2013.