

**David Jamison, Ph.D.**  
**Biomedical Engineer**

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**Expertise**

Biomechanical analysis of injury causation, Orthopedic devices and implants, Biomechanical testing, Biomaterials, Technical and medical writing

**Education**

- 2013      **Doctor of Philosophy, Biomedical Engineering**  
Drexel University, Philadelphia PA  
Dissertation: *Mechanical characterization of the human lumbar intervertebral disc under impact loading conditions*  
Advisor: Dr. Michele Marcolongo
- 2008      **Bachelor of Science, Engineering Mechanics**  
Johns Hopkins University, Baltimore MD  
Senior Capstone Design Project: designed and manufactured prototype for a highly instrumented anthropomorphic testing device neck in collaboration with JHU Applied Physics Laboratory

**Professional Experience**

- 2020 - Present      **Biomedical Engineer**  
Exigent, Greater Philadelphia Area  
*Forensically investigate and analyze personal injuries and injury patterns; use biomechanics and biomedical engineering to determine the forces and motions necessary to cause injuries*
- 2016 – 2020      **Biomedical Engineer**  
Robson Forensic, Philadelphia, PA
- 2019 – Present      **Adjunct Professor, Biomedical Engineering**  
Drexel University, Philadelphia, PA
- 2013 – Present      **Adjunct Professor, Mechanical Engineering** (2018 – Present)  
**Assistant Professor, Mechanical Engineering** (2017 – 2018)  
**Visiting Assistant Professor, Mechanical Engineering** (2013 – 2017)  
Villanova University, Villanova, PA
- 2008      **Fire Protection Engineer**  
Jensen Hughes (formerly Hughes Associates), Baltimore, MD

**Research Experience**

*Research Interests*

Orthopaedic biomechanics, connective tissue injury and degeneration

*Grants, Fellowships, and Awards*

2015

2010 BMES Grant Writing Session Young Investigator Travel Award  
Best Student Paper Award, International Conference on Human Performance at Sea, Glasgow, UK

*Mentored Student Research*

2016 – Present Carrie O'Donel (Master's Thesis): "The Effects of Rear Facing Child Restraint System Design and Installation Method on Head and Neck Injury Severity in Infants Involved in Rear End Collisions"  
Jan – May 2016 Michael Long (Undergraduate): "Effect of Pitch Count and Number of Days Rest on Shoulder Ligament Health"  
2015 – 2016 Samantha Kalup (Undergraduate): "Constitutive Modeling of Lumbar Intervertebral Disc Tissues under Transient, Hyperphysiologic Loading Conditions"  
March – May 2015 John Coppa (Undergraduate): "Development of a Geometric Model of Lumbar Vertebra using  $\mu$ -CT images"

**Selected Publications and Presentations**

*Peer-reviewed Journals*

Martin, D.P., A.G. Park, **D. Jamison**, C.M. Jones, A.M. Ilyas (2019). Biomechanical Comparison of Titanium Locking Fragment-Specific and Volar Locking Plates for AO B1 and B2 Fractures of the Distal Radius. *J. Hand Surg. Am.* 44, 1093.e1-1093.e8.

**Jamison, D** and MS Marcolongo (2014). The Effect of Creep on Human Lumbar Intervertebral Disk Impact Mechanics. *Journal of Biomechanical Engineering*.

**Jamison, D**; M. Cannella, E. Pierce, M. Marcolongo (2013). A Comparison of the Lumbar Intervertebral Disc Mechanical Response to Normal and Impact Loading Conditions. *Journal of Biomechanical Engineering*

*Textbook Contributions*

**Jamison, D.** and M. Marcolongo (2012). Advances in Biomaterials for Clinical Orthopaedic Applications. In *Orthopaedic Biomechanics*. B. A. Winkelstein, Taylor & Francis Group: 561-582.

*Conference Proceedings*

Kalup, S; J. DeLucca; D. Elliott; **D. Jamison** (2016). Mechanical properties of human lumbar intervertebral disc tissues under transient hyperphysiologic non-acute loading conditions: a pilot study. Proceedings of the 42<sup>nd</sup> Annual Northeast Bioengineering Conference

**Jamison, D**; C. Massey; M. Marcolongo (2014). Development and Validation of a Lumbar Disc Finite Element Model for Impact Mechanical Response Analysis. Orthopaedic Research Society Annual Meeting, New Orleans, LA

**Jamison, D**; C. Massey; M. Marcolongo (2012). The Effect of Repeated Impacts on Intervertebral Disc Mechanics During a Diurnal Cycle. Orthopaedic Research Society Annual Meeting, San Francisco, CA

Buckland, D.; J. Perez-Rosello; J. Lin; J. Moriarty; **D. Jamison**; Brian Snyder (2011). Dynamic and Static Ultrasound Imaging of the Intervertebral Disc. Orthopaedic Research Society Annual Meeting, Long Beach, CA

**Jamison, D.**, M. Cannella, et al. (2010). Analysis of mechanical behavior of the lumbar spine under high impact loading. International Conference on Human Performance at Sea, Glasgow, Scotland, United Kingdom, University of Strathclyde.

## **Teaching Experience**

### *Teaching Capabilities*

Biomechanics, Physiology, Mechanics of Materials, Experimental Design and Research Methodology

### *Teaching Experience*

Courses taught include:

- Biomedical Mechanics (BMES 441/641)
- Fundamentals of Biomedical Engineering (EGR 2021)
- Biomechanics of Soft Tissues (ME 7560)
- Introduction to Biomechanics (ME 5500)
- Mechanics of Materials (ME 2103)

### *Grants, Fellowships and Awards*

- 2015 Innovation in the Classroom Grant, Villanova University (Internal): “Development of biomechanics learning modules and lab exercises to enhance student learning and training of new research students” – Award Amount: \$19,000
- 2015 Topical Grant, Kern Entrepreneurial Engineering Network: “Framework for an ideation term project: integration of EML in upper-level courses” – Award Amount: \$15,890

## **Professional Memberships**

Biomedical Engineering Society

Orthopaedic Research Society, Spine Section Member

National Society of Black Engineers, Healthcare Innovation Special Interest Group Member

## **Professional Service**

PLOS One, Manuscript Reviewer

Orthopaedic Research Society, Abstract Reviewer

Biomedical Engineering Society, Abstract Reviewer

## **Invited Presentations, Guest Lectures**

“Using a Biomechanical Engineer to Investigate Injury Causation,” New Jersey Defense Association (NJDA) Auto Liability Seminar, November 26, 2019

Villanova University ME 5500 Introduction to Biomechanics, “Forensic Biomechanics,” November 2018