



Curriculum Vitae

André M. Loyd, Ph.D.
Biomechanical Specialist

Professional Practice

André Loyd is an experienced biomechanical and accident reconstruction specialist. He has 14 years of experience in the field of biomechanics. He provides injury reconstruction analysis for pedestrian injuries, slip and fall incidents, industrial accidents and helmet effectiveness. His accident reconstruction abilities include high-speed and minor impacts, motorcycle accidents and conspicuity analysis. Dr. Loyd has particular expertise in pediatric injury, head injury and neck injury.

Before joining Crane Engineering, André earned a doctorate from the Injury Biomechanics Laboratory at Duke University and completed a post-doctorate fellowship through the Orthopedic Biomechanics Laboratory at the Mayo Clinic. He conducted research on pediatric and adult head injury, neck laceration, helmets, neck injury, bone fracture and crash dummy accuracy. He also published in such journals as the Stapp Car Crash Journal, Journal of Biomechanics, Accident Analysis and Prevention, Forensic Science International and Traffic Injury Prevention.

Employment History

Biomechanical and Accident Reconstruction Specialist – Crane Engineering

Plymouth, MN • 2014 - Present

Specializes in biomechanical injury investigation and vehicle accident reconstruction.

Biomechanical and Accident Reconstruction Specialist – S-E-A Limited

Houston, TX • 2013 - 2014

Conducted vehicle accident reconstructions and biomechanical injury reconstructions.

Biomechanics and Motion Analysis Laboratory Post-Doctoral Fellow – Mayo Clinic

Rochester, MN • 2012 - 2013

Conducted a biomechanical research study on the effectiveness of helmets in hockey in relation to concussions in hockey. Also, studied the laceration resistance of neck protectors used in hockey.

Biomedical Engineering Graduate Student Biomechanics focus – Duke University

Durham, NC • 2003 - 2011

Dissertation Title: *Studies of the Human Head from Neonate to Adult: An Inertial, Geometrical and Structural Analysis with Comparisons to the ATD Head*. Also, conducted research on pediatric neck injury, pediatric torso injury and bone fracture.

Honors

Engineer in Training

Caffey Award (Honorable Mention) Best Basic Science Paper at 2012 Ped. Radiology Conference

NIH Ruth L. Kirschstein National Research Service Fellow, 2012

2nd Place Stapp Student Award for Paper at Stapp Car Crash Conference, 2010

National Science Fellow (NSF), 2002 - 2005

Outstanding Senior and Junior in Mechanical Engineering, 2001 - 2002

Education

Ph.D. in Biomedical Engineering, Duke University, Durham, NC, 2012.

Master of Science in Biomedical Engineering, Duke University, Durham, NC, 2006.

Bachelor of Science in Mechanical Engineering, Clemson University, Clemson, SC, 2002.

Publications

Mercado-Corujo, H., Flores, L., Loyd, A., *Bringing Things Full Cycle – How to Approach Bicycle Crash Investigations From Every Perspective Amid Rising Use*, CLM Magazine, January 2017.

Loyd, André Matthew, Nightingale, Roger W., Luck, Jason F., Song, Yin, Fronheiser, Lucy, Cutcliffe, Hattie, Myers, Barry S., Bass, Cameron R. 'Dale': *The Compressive Stiffness of Human Pediatric Heads*, Journal of Biomechanics 2015, 48(14): 3766-3775.

Adamski, Kelly N., Loyd, André Matthew, Samost, Al, Myers, Barry, Nightingale, Roger, Smith, Kathleen, Bass, Cameron 'Dale': *Pediatric Coronal Suture Fiber Alignment and the Effect of Interdigitation on Coronal Suture Mechanical Properties*, Annals of Biomedical Engineering, 2015.

Loyd, André Matthew, Nightingale, Roger W., Song, Yin, Luck, Jason F., Cutcliffe, Hattie, Myers, Barry S., Bass, Cameron 'Dale', *The Response of the Adult and ATD Heads to Impacts onto a Rigid Surface*, Accident Analysis & Prevention, 2014.



- Loyd, André Matthew, Amador, Carolina, An, Kai-Nan, *The Effects of Time and Moisture on Elasticity Imaging Phantom Physical Properties: A Pilot Study*, Revista Ingenieria Biomedica, 2014.
- Loyd, André Matthew, Berglund, Larry, Twardowski, Casey P., Stuart, Michael B., Smith, Ansley, Gaz, Daniel V., Krause, David A., An, Kai-Nan, Stuart, Michael J., *The Most Cut-Resistant Neck Guard for Preventing Lacerations to the Neck*, Clinical Journal of Sports Medicine, 2014.
- Lee, Calvin, Loyd, André Matthew, Nightingale, Roger, Myers, Barry S., Damon, Andrew, Bass, Cameron R. 'Dale', *Three-Dimensional Adult Male Head and Skull Contours*, Traffic Injury Prevention, 2014.
- Luck, Jason, Nightingale, Roger, Song, Yin, Kait, Jason R., Loyd, André M., Myers, Barry S., Bass, Cameron, *Tensile Failure Properties of the Perinatal, Neonatal and Pediatric Cadaveric Cervical Spine*, Spine, 2013.
- Loyd, André Matthew, Nightingale, Roger W., Song, Yin, Luck, Jason F., Cutcliffe, Hattie, Myers, Barry S., Bass, Cameron R.'Dale', *Impact Properties of Adult and ATD Heads*, In: International Research Council on Biomechanics of Injury, 2012.
- Mulroy, Maura H., Loyd, André Matthew, Frush, Donald P., Verla, Terence G., Bass, Cameron R. 'Dale', Myers, Barry S., *Evaluation of Pediatric Skull Fracture Imaging Techniques*. Forensic Science International, 2012.
- Davis, Matthew, Loyd, André, Shen, Han-yu Henry, Mulroy, Maura H., Nightingale, Roger W., Myers, Barry S., Bass, Cameron 'Dale', *The Mechanical and Morphological Properties of 6-Year-Old Cranial Bone*, Journal of Biomechanics, 2012.
- Loyd, André M., Nightingale, Roger, Bass, Cameron R., Mertz, Harold J., Frush, Donald, Daniel, Clark, Lee, Calvin, Marcus, Jeffrey R., Mukundan, Srinivasan, Myers, Barry S., *Pediatric Head Contours and Inertial Properties for ATD Design*, Stapp Car Crash Conference, 2010.
- Lamp, John F., Salzar, Robert, Kerrigan, Jason, Parent, Daniel, Lopez-Valdez, Francisco, Lau, Sabrina, Lessley, David, Kent, Richard, Luck, Jason, Loyd, André, *Expansion and Evaluation of Data Characterizing the Structural Behavior of the Pediatric Abdomen*, 54th Annual Conference of the Association for the Advancement of Automotive Medicine, 2010.
- Marcus, Jeffrey R., Domeshek, Leahthan F., Loyd, André M., Schoenleber, John M., Das, Rajesh R., Nightingale, Roger W., Mukundan, Srinivasan, *Use of a Three-Dimensional Normative Database of Pediatric Craniofacial Morphology for Modern Anthropometric Analysis*, Plastic and Reconstructive Surgery, 2009.
- Kent, Richard, Salzar, Robert, Kerrigan, Jason, Parent, Daniel, Lessley, David, Sochor, Mark, Luck, Jason F., Loyd, André, Song, Yin, Nightingale, Roger, Bass, Cameron R. 'Dale', Maltese, Matthew R., *Pediatric Thoracoabdominal Biomechanics*, Stapp Car Crash Journal, 2009.
- Luck, Jason F., Nightingale, Roger W., Loyd, André M., Prange, Michael T., Dibb, Alan T., Song, Yin, Fronheiser, Lucy, Myers, Barry S., *Tensile Mechanical Properties of the Perinatal and Pediatric PMHS Osteoligamentous Cervical Spine*, Stapp Car Crash Journal, 2008.



Book Chapter

Loyd, André Matthew, Van-Ee, Chris, Panzer, Matthew, Bass, Cameron R., Myers, Barry: *Skull Biomechanics*. In: *Orthopaedic Biomechanics* Edited by Winkelstein, Beth A.: CRC Press, 2012.

Presentations

“Minor Vehicle Collision and Injury Analysis,” at Twin Cities Claim Association Meeting, Bloomington, MN, 2015.

“Accident Reconstruction and Biomechanics,” at Houston Claims Association Meeting S-E-A, Ltd., Houston, TX, 2014.

“Height Threshold for Pediatric Skull Fracture: Cadaver Study”, at the Society for Pediatric Radiology 55th Annual Meeting & Postgraduate Course, San Francisco, CA, 2012.

“Pediatric Head Contours and Inertia Properties for ATD Design,” at 54th Stapp Car Crash Conference, Scottsdale, AZ, 2010.

“Pediatric Head Impact Response,” at 6th World Congress on Biomechanics, Singapore.

“Determination of Tensile Stiffness Scale Factors for Pediatric Cervical Spines,” at 6th World Congress on Biomechanics, Singapore.

“Pediatric Thoracoabdominal Biomechanics,” at 53rd Stapp Car Crash Conference Savannah, GA, 2009.

“Expansion and Evaluation of Data Characterizing the Structural Behavior of the Pediatric Abdomen,” at Association for the Advancement of Automotive Medicine, Las Vegas, NV, 2010.

“Impact Headprints of Dummies, Pediatric and Adult Post-Mortem Human Surrogates.” At Injury Biomechanics Research, 37th International Workshop, Savannah, GA, 2009.

“Strain Softening in Adult and Pediatric Dura Mater,” at Injury Biomechanics Research: 37th International Workshop, Savannah, GA.

“Thresholding Techniques for Developing Geometrically Accurate Pediatric Skull and Cervical Spine Models,” at Injury Biomechanics Research: 32nd International Workshop, Nashville, TN.

“Pediatric Head Contour Data: a pilot study,” at Injury Biomechanics Research: 34th International Workshop, Dearborn, MI.

“Pediatric Head Contour Data: a pilot study,” at National Society of Black Engineers National Convention Columbus, OH, 2007.

“Biomechanics of the Pediatric Head,” at Bouchet Society Meeting Durham, NC, 2007.

“Pediatric Head Contour Data: a pilot study,” at Injury Biomechanics Research: 34th International Workshop, Dearborn, MI, 2006.



“Tensile Mechanical Properties of the Pediatric Human Osteoligamentous Cervical Spine,” at 5th World Congress of Biomechanics, Munich, Germany, 2006.

“A CT Method for Finding the Pediatric Head Center of Gravity and Inertial Properties,” at National Society of Black Engineers National Convention, Pittsburgh, PA, 2006.

“Thresholding Techniques for Developing Geometrically Accurate Pediatric Skull and Cervical Spine Models,” at National Society of Black Engineers Tech Talks, Boston, MA, 2005.

“Mechanical Properties of the Human Pediatric Head and Cervical Spine,” at Southern Consortium for Injury Biomechanics: 3rd Annual Meeting, Birmingham, AL, 2005.

“A CT Method for Finding the Pediatric Head Center of Gravity and Inertial Properties,” at Injury Biomechanics Research: 33rd International Workshop, Washington, District of Columbia, 2005.

“Thresholding Techniques for Developing Geometrically Accurate Pediatric Skull and Cervical Spine Models,” at Injury Biomechanics Research: 32nd International Workshop, Nashville, TN, 2004.

