Exponent®
Engineering & Scientific Consulting

Christopher Andrecovich, M.S.

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Professional Profile

Mr. Andrecovich has expertise in the fields of accident reconstruction and impact and injury biomechanics. He has provided accident reconstruction and vehicle dynamics analyses of accidents involving passenger vehicles, light-duty trucks, motorcycles, and buses. He has experience in the reconstruction of complex accident situations including front, rear, and side high-speed collisions, low-speed collisions, pole/guard rail impacts, and impacts involving pedestrians and cyclists.

Mr. Andrecovich's accident reconstruction analyses are performed through the use of conventional techniques and computer simulation of vehicle collisions that utilize time-based energy and momentum models. He is proficient in imaging data from Event Data Recorders (EDR).

Mr. Andrecovich's current areas of focus in injury biomechanics include vehicle related impact biomechanics and occupant kinematics, orthopaedic research, ballistic injury, and sports equipment evaluation testing. He has conducted a variety of biomechanical studies using both human and surrogate models to evaluate injury causation and injury prevention.

Prior to joining Exponent, Mr. Andrecovich was a Research Assistant in the Biomedical Engineering Department at Wayne State University (WSU). While at WSU, he was primarily responsible for the planning and execution of biomechanical studies in collaboration with the orthopaedic surgery residents of the Detroit Medical Center (DMC). Mr. Andrecovich was also part of the Orthopaedic Research Committee that handled research development between WSU Bioengineering and DMC Orthopaedics Departments.

While at WSU, Mr. Andrecovich worked on projects for both the United States Department of Defense and the United Kingdom's Ministry of Defense. He has been involved in penetrating ballistics trauma studies evaluating long bone fracture via direct and indirect mechanisms, and the effects of velocity and mass on the penetration of frangible surrogate projectiles (FSPs) into the human neck. Additionally, he has also evaluated non-penetrating injuries, investigating blunt ballistics impacts to the skull associated with less-lethal munitions.

Mr. Andrecovich also has expertise in the field of sports equipment testing. He also operated and managed the Sports Injury Biomechanics Laboratory at WSU, where he designed and implemented testing protocols and procedures to evaluate the efficacy of sporting equipment injury mitigation.

Academic Credentials & Professional Honors

M.S., Biomedical Engineering, Wayne State University, 2013

B.S., Biomedical Engineering, Lawrence Technological University, 2009

Prior Experience

Research Assistant, Wayne State University, 2011-2017

Professional Affiliations

Society of Automotive Engineers—SAE

Publications

Buckman JL, Parenteau CS, Burnett R, Viano DC, Andrecovich C. Assessment of the 50th Hybrid III Responses in Blunt Rear Impacts to the Torso, SAE 2021-01-0919, Society of Automotive Engineers, 2021.

Parenteau CS, Andrecovich C, Sherman S, Svensson M, Teenage Activities and Postures when Passengers in a Vehicle Environment, IRC-21-74, IRCOBI Conference, 2021

Parenteau CS, Burnett R, Kameshwari Danthurthi S, Andrecovich C. Effect of ATD Size, Vehicle Interior and Restraint Misuse on Second-Row Occupant Kinematics in Frontal Sled Tests, SAE 2021-01-0914, Society of Automotive Engineers, 2021.

Yaek JL, Andrecovich CJ, Cavanaugh JM, Rouhana SW. Side impact assessment and comparison of appropriate size and age equivalent porcine surrogates to scaled human side impact response biofidelity corridors. Staff Car Crash Conference, San Diego, CA, November 12-14, 2018.

Yaek J, Andrecovich C, Rouhana S, Cavanaugh J. Side impact assessment and comparison of appropriate size and age equivalent porcine surrogates to scaled human side impact response biofidelity corridors. Poster Presentation. 8th World Congress of Biomechanics, Dublin, Ireland, July 8-12, 2018.

Mijic D, Yokhana S, Andrecovich C, Kalra K. Comparison of suture anchor vs. interference screw technique for patellar fixation for medial patellofemoral ligament reconstruction. Sports Orthopaedics and Traumaology 2019 March; 35:40-48.

Yaek JL, Andrecovich CJ, Cavanaugh JM, Rouhana SW. Side impact and comparison of appropriate size and age equivalent porcine surrogates to scaled human side impact response biofidelity corridors. Stapp Car Crash Journal 2018 Nov; 62:359-377.

Buice JM, Esquivel AO, Andrecovich CJ. Laboratory Validation of a Wearable Sensor for the measurement of Head Acceleration in Men's and Women's Lacrosse. ASME. J Biomech Eng. 2018;140(10):101004-101004-8.

Patel S, Andrecovich C, Silverman M, Zhang L, Shkoukani M. Biomechanic factors associated with orbital floor fractures. JAMA Facial Plast Surg. Published online March 09, 2017.

Bir C, Andrecovich C, DeMaio M, Dougherty P. Evaluation of bone surrogates for indirect and direct ballistic fractures. Forensic Science International; January 2016.

Milshteyn M, Dwyer M, Andrecovich C, Bir C, Needleman RE. Comparison of two fixation methods for arthrodesis of the calcaneocuboid joint. Foot and Ankle International; November 2014.

Jackson AT, Dieterle J, Maerz T; Baker K, Koueiter D, Andrecovich C, Anderson K. Strength of ulnar fixation in ulnar collateral ligament reconstruction: A biomechanical comparison of traditional bone tunnels to the tension-slide techniques. Journal of Shoulder and Elbow Surgery; December 2012.

Presentations

Parenteau, C., Burnett, R., Danthurthi, S., and Andrecovich, C., "Effect of ATD Size, Vehicle Interior and Restraint Misuse on Second-Row Occupant Kinematics in Frontal Sled Tests," SAE WCX Digital Summit, 2021

Dragomir Mijic, Sanar Yokhana, Christopher Andrecovich, Kunal Kalra. (2018) A Biomechanical Comparison of Suture Anchor vs. Interference Screw Technique for Medial Patellofemoral Ligament Reconstruction. Podium presentation at Mid-America Orthopedic Society (MAOA) Annual Meeting: San Antonio, TX.

Dragomir Mijic, Sanar Yokhana, Christopher Andrecovich, Kunal Kalra. (2018) A Biomechanical Comparison of Suture Anchor vs. Interference Screw Technique for Medial Patellofemoral Ligament Reconstruction. Podium presentation at Michigan Orthopedic Society (MOS) Annual Meeting: Mackinac Island, MI.

Criado A, Yokhana S, Andrecovich C, Yassir W. Pedicle screw pullout strength using calcium polyphosphate cement compared to conventional cement augmentation. Michigan Orthopaedic Society, poster presentation; June 2016.

Patel V-S, Andrecovich C, Silverman M, Zhang L, Cavanaugh J, Shkoukani M. Biomechanics of the orbital floor fracture. Otolaryngology Scientific Forum of Wayne State University Department of Otolaryngology; A podium presentation; April 2016.

Dwyer M, Milshteyn M, Andrecovich C, Bir C, Needleman R. Comparison of two fixation methods for arthrodesis of the calcaneocuboid joint. Michigan Orthopaedic Society; A podium presentation; June 2013.

Dwyer M, Milshteyn M, Andrecovich C, Bir C, Needleman R. Comparison of two fixation methods for arthrodesis of the calcaneocuboid joint. Detroit Academy of Orthopaedic Surgury; May 2013.

Jacobson NA, Milshteyn M, Andrecovich C, Milia MJ. Minimum one year follow up of anterior cruciate ligament reconstruction using doubled peroneus longus allograft technique. Michigan Orthopaedic Society; A podium presentation June 2012.

Jacobson NA, Milshteyn M, Andrecovich C, Milia MJ. Minimum one year follow up of anterior cruciate ligament reconstruction using doubled peroneus longus allograft technique. Detroit Academy of Orthopaedic Surgery; May 2012.

Jackson AD, Dieterle J, Maerz T, Baker K, Koueiter D, Andrecovich C, Anderson K. Strength of ulnar fixation in ulnar collateral ligament reconstruction: A biomechanical comparison of traditional bone tunnels to the tension-slide techniques. Michigan Orthopaedic Society 2010 Annual Meeting; A Podium Presentation; June 20, 2010.

Jackson AD, Dieterle J, Maerz T, Baker K, Koueiter D, Andrecovich C, Anderson K. Post-operative ultimate strength of ulnar fixation in ulnar collateral ligament reconstruction: A comparison of two techniques. American Academy of Orthopaedic Surgeons 2011 Annual Meeting; Accepted as Poster Presentation; February, 2011.

Jackson AD, Dieterle J, Maerz T, Baker K, Koueiter D, Andrecovich C, Anderson K. Post-operative ultimate strength of ulnar fixation in ulnar collateral ligament reconstruction: A comparison of two techniques. Orthopaedic Research Society 2011 Annual Meeting; A Poster Presentation; January 2011.

Yaek J, Andrecovich C, Rouhana S, Cavanaugh J. Side impact assessment and comparison of appropriate size and age equivalent porcine surrogates to scaled human side impact response biofidelity corridors. Poster Presentation. 8th World Congress of Biomechanics, Dublin, Ireland, July 8-12, 2018.

Yaek JL, Andrecovich CJ, Cavanaugh JM, Rouhana SW. Side impact assessment and comparison of

appropriate size and age equivalent porcine surrogates to scaled human side impact response biofidelity corridors. Staff Car Crash Conference, San Diego, CA, November 12-14, 2018.

Parenteau CS, Burnett R, Kameshwari Danthurthi S, Andrecovich C. Effect of ATD Size, Vehicle Interior and Restraint Misuse on Second-Row Occupant Kinematics in Frontal Sled Tests, SAE 2021-01-0914, Society of Automotive Engineers, 2021.

Parenteau CS, Andrecovich C, Sherman S, Svensson M, Teenage Activities and Postures when Passengers in a Vehicle Environment, IRC-21-74, IRCOBI Conference, 2021

Buckman JL, Parenteau CS, Burnett R, Viano DC, Andrecovich C. Assessment of the 50th Hybrid III Responses in Blunt Rear Impacts to the Torso, SAE 2021-01-0919, Society of Automotive Engineers, 2021.

Additional Education & Training

“HVE Forum” Engineering Dynamics Corporation, March 2017

"Traffic Crash Reconstruction - 1,” Northwestern University Center for Public Safety, July 2018

“Crash Data Retrieval Data Analyst Course,” Northwestern University Center for Public Safety (approved by Bosch, manufacturer of the CDR tool), June 2019

“HVE Forum” Engineering Dynamics Corporation, February 2020

“Bosch© CDR Tool Technician Training” Institute of Police Technology and Management (approved by Bosch, manufacturer of the CDR tool), May 2020

Advisory Appointments

Lawrence Technological University Biomedical Engineering Advisory Board Chair, November 2021-Present