

CURRICULUM VITAE

Adam D. Goodworth, Ph.D., P.E.

Areas of Professional Expertise

Biomechanical Expert and Analysis of Real-World Accidents
Occupant Kinematic and Dynamic Analysis
Injury Mechanism Evaluation and Tolerance Criteria
Evaluation of Automotive Protective Safety Systems
Fall Risk Analysis Based on Balance and Gait Testing and Simulation
Accident Reconstruction and Event Data Recorder Interpretation

Education

2005 -2010 Ph.D. in Biomedical Engineering, Oregon Health & Science University, Portland, OR
Dissertation topic: Sensorimotor integration and balance
2002 -2004 M.S. in Engineering Systems, Colorado School of Mines, Golden, CO
Thesis topic: Modeling fracture mechanics
1998 -2002 B.S. in Engineering (Mechanical specialty), Colorado School of Mines, Golden, CO

Employment History

2023-present President of Goodworth Biomechanic & Forensic Consulting, LLC
2022-present Full Professor, Tenured, Westmont College, Santa Barbara, CA
2020-present Bioengineer & Biomechanics Expert, Automotive Safety Research, Inc., Santa Barbara, CA
2019-2022 Associate Professor, Westmont College, Santa Barbara, CA
2016-2019 Associate Professor, Tenured, University of Hartford, West Hartford, CT
2018 Visiting Scholar, Sabbatical, Mechanical Engineering Department, Baylor University, Waco, TX
2010-2016 Assistant Professor, Tenure-track, University of Hartford, West Hartford, CT
2010 Postdoctoral Researcher, Oregon Health & Science University, Portland, OR
2005 -2010 Graduate Research Assistant, Oregon Health & Science University, Portland, OR
2004 -2005 Design Engineer, JR Engineering, LLC, Denver, CO

Licenses and Certifications

2021 ACTAR Accredited Traffic Accident Reconstructionist, # 2225
2020 Professional Engineer, Mechanical License # M 40242, State of California
2014 Certificate in Prosthetics, Newington Certificate Program in Prosthetics, Cromwell, CT

Continuing Education

2022 Event Data Recorder Use in Traffic Crash Reconstruction, *Institute of Police Technology and Management*
2022 *National Highway Traffic Safety Administration*, Human Subjects for Biomechanical Research, Denver, CO
2022 *Stapp Car Crash Conference*, Denver, CA
2022 Bosch Crash Data Retrieval Operator training, *Get EDR Data*, Sacramento, CA

- 2021 *California Association of Accident Reconstruction Specialists*, Fall conference on Accident Investigation, Review, Industry Update, and Case Studies, Lake Tahoe, CA.
- 2021 *Institute of Police Technology and Management*, ACTAR test preparation
- 2021 *American Academy of Forensic Sciences* Virtual conference
- 2021 *California Association of Accident Reconstruction Specialists*, Scene Visualization & Courtroom Presentation
- 2018 *World Congress of Biomechanics* conference, Dublin, Ireland.
- 2017 *International Society for Posture and Gait Research*. Fort Lauderdale, FL.
- 2016 *American Physical Therapy Association Combined Sections Meeting*. Anaheim, CA
- 2015 *Kentucky spinal cord and Head Injury Research Trust Symposium* Louisville, KY
- 2014 *International Society for Posture and Gait Research*. Vancouver, Canada.
- 2013 *LIMBS International Summit*, Prosthetics devices for developing countries, El Paso, TX
- 2013 *American Orthotic Prosthetic Association World Congress*, Appropriate Prosthetics Technologies for Developing Countries. Orlando, FL
- 2012 *American Orthotic Prosthetic Association*, Ankle Foot Orthoses and Balance, Boston, MA
- 2011 *IEEE Engineering Medicine and Biology*, Motor Control Principles in Neuro-robotics, Boston, MA
- 2011 Vestibular Rehabilitation in the Medically Complex Elder, Physical Therapy Workshop, Rocky Hill, CT
- 2010 Postdoctoral Training, Neurology Department, *Oregon Health & Science Univ.*, Portland, OR
- 2009 *Society for Posture and Gait Research*. Bologna, Italy.
- 2008 *National Science Foundation, Mathematical Biosciences Institute*, Biomechanics– muscle and whole body, Columbus, OH
- 2007 *Northwest Ear, Nose, and Throat Conference*. Portland,OR.

Related Research Experience

- 2019-present *Director and Developer, Biomechanics & Balance Lab, Westmont College*, Custom design-built motor-driven translational platform to analyze real-world balance, including accelerometers, gyroscopes, 3D motion capture systems, force plates, tensile testing, vehicle restraint systems.
- 2016-2018 *Human Subjects Committee Member, University of Hartford, CT*, Reviewed proposals across the University for Adherence to ethical principles in human subject research.
- 2010-2015 *Physical Therapy Faculty Research Committee Chair, University of Hartford, CT*.
- 2012-2013 *Co-Director and Co-Developer, Pediatrics Balance Lab, University of Hartford, CT*, Lab integrates electromyography, 3-D kinematics, and a custom design-built servomotor tilting platform for identifying sensory reliance.
- 2010-2019 *Director and Developer, Human Balance Control Lab, University of Hartford, CT*, Lab can assess walking balance on an Omni-directional treadmill system using 2-D motion capture, tilt sensors, and custom design-built motor-driven rotating platform.
- 2010-present *Teach Research methods* to undergraduate and graduate students, including design, experimentation, analyses, and statistics.

Vehicle Safety & Restraint System Experiences

- 2022-present Ongoing research of seat belts, airbags, seat belt fit, and fetal outcomes in crashes in Biomechanics Lab (Westmont College, CA)
- 2020-present Vehicle investigations
- 2020-present Observations with sled test, frontal airbag testing, curtain airbag testing, pretensioner testing, rollover simulation, and occupant dynamics at SAFE Laboratories, Goleta, CA

Funded Research Grant Awards

- 2024 – 2029 National Institutes of Health: *Contribution of vestibular dysfunction and its central multisensory integration to imbalance in aging* (subcontract)
- 2023 – 2024 Westmont College: *Computational feedback modeling of postural control in people severe balance impairment*
- 2021 – 2022 Westmont College: *Development and Pilot Testing of Restraint Systems for Injury Biomechanics*
- 2019 - 2024 Department of Defense OPORP: OP180014, *Direct quantification of balance amongst limited community ambulators using microprocessor prosthetic knees*
- 2019 ENHP Institute of Translational Research Seed Grant, *Engineering solutions for clinical innovation in rehabilitation*
- 2018 - 2023 National Science Foundation DARE #1803714, *Unraveling posture control in severe cerebral palsy*
- 2017- 2018 ENHP Institute of Translational Research Seed Grant, *Segmental trunk support for hippotherapy*
- 2017 University Coffin Grant, *Sensorimotor integration for posture control in the developing infant*
- 2016- 2017 Growing Partnership Award (Strategic Goal II), *Customized Support Devices in Electric Cars for Children with Disabilities*
- 2016- 2017 ENHP Institute of Translational Research Seed Grant, *Isolating vestibular contributions to sitting through a sway-referenced backboard system*
- 2015-2016 National Institutes of Health, *Loan Repayment Program Award Recipient*
- 2015 - 2016 CT Space Grant College Consortium Graduate Research Fellowship, *A longitudinal description of sensorimotor adaptations for posture control*
- 2014 - 2018 National Institutes of Health R03 Grant DC013858, *Sensory contributions to typical and atypical development of trunk control*
- 2014 - 2016 Scoliosis Research Society, *Segmental sensorimotor control of trunk posture in adolescent idiopathic scoliosis*
- 2011 - 2015 National Institutes of Health R01 Grant DC010779, *Vestibular contribution to the control of human upright stance* (subcontract)
- 2014 - 2015 ENHP Institute of Translational Research Sprout Grant, *Prosthetics training across borders*
- 2014 Summer Stipend, *Crafting prosthetic education tools for clinics and patients in developing countries*
- 2012 - 2013 Greenberg Junior Faculty Grant, *Reducing falls through mathematical equations*
- 2011 - 2013 Saint Francis Medical Center / University of Hartford (Jointly funded) Balance and Mobility Research Initiative, *A gel surface to mitigate injury when falls occur*
- 2011 - 2012 ENHP Institute of Translational Research Seed Grant, *Influence of ankle orthoses on dynamic balance control*
- 2011 Summer Stipend, *Identification of brain structures and the rules which govern coordination of body segmental motion during curvilinear walking*
- 2006-2007 National Institutes of Health, *Training Grant T32DC005945*

Professional Organizations

- 2023- Associate Member, *American Academy of Forensic Sciences*
- 2021- Member, *Society for Automotive Engineering International*
- 2020- Member, *California Association of Accident Reconstruction Specialists*
- 2008- Member, *International Society for Posture and Gait Research*

Grant Reviewer

2019 Small Projects in Rehabilitation Research, *Veterans Affairs Office* of Research and Development
2017 *Action Medical Research*, a UK-based charity supporting medical research
2017, 2019 *National Institutes of Health*, National Institute on Disability and Rehabilitation Research
2017 *Netherlands Organization for Scientific Research*, Applied and Engineering Sciences

Journal Reviewer

2024 Reviewer for Human Movement Science
2010- Journal of Neurophysiology
2021 Scientific Reports – Nature
2021 IEEE Transactions on Neural Systems & Rehabilitation Engineering
2021 Healthcare, Nursing Section
2020 Journal of Functional Morphology and Kinesiology
2020 International Journal of Environmental Research and Public Health
2018-2019 Journal of Pediatric Rehabilitation Medicine
2017 IEEE Transactions on Biomedical Engineering
2016 Archives of Physical Medicine and Rehabilitation
2016 PLOS ONE
2016 Disability and Rehabilitation
2015 Journal of Sports Sciences
2015 Journal of Biomechanics
2010, 2014 Brain Research Journal
2014, 2018 Gait and Posture
2013 Journal of Haptics in Rehabilitation and Neural Engineering
2013 Journal of Bioengineering & Biomedical science
2012 IEEE Biomedical Robotics and Biomechatronics Conference

Provisional Patents

Goodworth A.D. *Omni-directional treadmill*. USPTO Application #61381983, September, 2010.

Book Chapters

Saavedra S. & Goodworth A.D. (2018). Posture Control in Children and Youth with Cerebral Palsy. Miller F, Bachrach S, Lennon N, O'Neil M (Ed.), *Cerebral Palsy (2nd Ed)*, Springer, New York.
Goodworth A.D., Johnson M, Popovich (2018). Chapter 12: Physical Therapy and Rehabilitation in Biomechatronics. Popovic MB (Ed), Elsevier, UK.
Troy K, Tetreault K, Goodworth A.D., Ji S, Popovic, (2018). Chapter 16: Biomechanics and Biomechatronics in sports, exercise, and entertainment. PopovicMB (Ed), Elsevier, UK.

Publications

Goodworth A.D., Felmlee D., Karmali F. (2023) Characteristics of inter-subject variability in feedback control of standing balance; *Journal of Neurophysiology*, <https://doi.org/10.1152/jn.00353.2022>

- Mellodge P, Saavedra S, Tran Poit L, Pratt K.A., Goodworth A.D.. (2023). Quantifying states and transitions of emerging postural control for children not yet able to sit independently. *Sensors (MDPI)*, 23(6):3309. doi: 10.3390/s23063309.
- Jensen, D., Jensen, L., Allison, W., Estrada-Lopez, J., Goodworth, A.D., Assessing Distinctives of the New Westmont Engineering Program in Terms of Their Impact on Recruitment, Student Satisfaction and Employment Potential, *Proceedings of the American Society for Engineering Education Annual Conference*, Minneapolis, MN, June 2022.
- Goodworth A.D. & Canada J. (2021) Passenger Behavior and Sitting Positions in Automobiles. *Society of Automotive Engineering STAPP Journal*, 65:29-48: doi: 10.4271/2021-22-0003
- Goodworth A.D. & Jennings T. (2021) Can the Clinical Test of Sensory Integration and Balance Predict Performance in Perturbed Walking? *Proceedings of the IEEE Engineering in Medicine and Biology Society*, 5737-5741. doi: 10.1109/EMBC46164.2021.9629475.
- Goodworth A.D. & Saavedra S. (2021) Postural mechanisms in moderate-to-severe cerebral palsy. *Journal of Neurophysiology*. 125(5):1698-1719. doi: 10.1152/jn.00549.2020
- Karmali F, Goodworth A.D., Valko Y, Leeder T, Peterka RJ, Merfeld DM. The role of vestibular cues in postural sway, *Journal of Neurophysiology*. <https://doi.org/10.1152/jn.00168.2020>
- Goodworth A.D., Kratzer A, Saavedra S (2020) Influence of visual biofeedback and inherent stability on trunk posture control. *Gait & Posture*: 80, 308-314.
- Lee D., Veneri D., Goodworth A.D. (2019) Self-management problem solving tools for lower limb prosthesis wearers: mobile app usability and acceptability study, *Journal of Prosthetics & Orthotics*: 31(1), 33-42. DOI: 10.1097/JPO.0000000000000216
- Goodworth AD, Barrett C, Rylander J, Garner G. (2019) Specificity and variability of trunk kinematics on a mechanical horse. *Human Movement Science*. 63:82-95 <https://doi.org/10.1016/j.humov.2018.11.007>
- Sienko KH, Seidler RD, Carender WJ, Goodworth AD, Whitney S, Peterka R. (2018). Potential mechanisms of sensory augmentation systems on human postural control. *Frontiers in Neurology*. <https://doi.org/10.3389/fneur.2018.00944>
- Goodworth A.D., Tetreault K., Klidonas T., Lanman J., Seyoung K., Saavedra S. (2018) Sensorimotor control of the trunk in a novel sitting sway referencing test, *Journal of Neurophysiology*. 120(1):37- 52. doi: 10.1152/jn.00330.2017
- Goodworth A.D., Peterka R.J. (2018) Identifying mechanisms of stance control: a single stimulus multiple output model-fit approach. *Journal of Neuroscience Methods*, 296:44-56. doi: 10.1016/j.jneumeth.2017.12.015
- Duncan K, Goodworth AD, Da Costa CSN, Wininger W, Saavedra S. (2018) Parent handling of Typical Infants Varies Segmentally Across Development of Postural Control *Pediatric Physical Therapy* (2017, in Press doi: 10.1007/s00221-017-5156-4)
- Thompson L, Haburcakova C, Goodworth AD, Lewis RF. (2018) An engineering model to test for sensory reweighting: nonhuman primates serve as a model for human postural control and vestibular dysfunction. *Journal of Biomechanical Engineering* 140(1). doi: 10.1115/1.4038157
- Goodworth A.D., Veneri D, Burger J, Lee D. (2017). Development and pilot testing of an international knowledge assessment of prosthetic management for patients using lower limb prostheses. *Journal of Prosthetics & Orthotics* 29:28-34.
- Goodworth A.D., Wu Y, Felmler D, Dunklebarger E, Saavedra S. (2017). A trunk support system and approach to study posture control in populations lacking full sitting ability. *IEEE Transactions on Neural Systems & Rehabilitation Engineering* 25(1):22-30.
- Wu Y, Duncan K., Saavedra S., Goodworth, A.D. (2016). Segmental trunk and head dynamics during frontal plane tilt stimuli in healthy sitting adults. *Journal of Biomechanics* (13):2831-2837.
- Crane B., Goodworth A.D., Liquori M., Ghosh S., Certo C., McKafferty L. (2016). Multi-disciplinary testing of floor pads on stability, energy absorption, and ease of hospital use for enhanced patient safety. *Journal of Patient Safety*, 12(3):132-139.

- Veneri D., Goodworth A.D., Lee D. (2016) The development and study of rehabilitation education materials for persons with lower limb amputation in developing nations: A pilot investigation. *International Journal of Health Science Research* 6: 185-196.
- Goodworth A.D., Perrone K., Pillsbury M., Yargeau M. (2015). Effects of visual focus and gait speed on walking balance in the frontal plane. *Human Movement Science*. 42: 15-26.
- Goodworth A.D., Mellodge P., Peterka R.J. (2014). Stance width changes how sensory feedback is used for multi-segmental balance control. *Journal of Neurophysiology*, 112:525-542.
- Goodworth A.D., Kunsman M., DePietro V., LaPenta G., Miles K., Murphy J. (2014). Characterization of how a walking boot affects balance. *Journal of Prosthetics and Orthotics*, 26:54-60.
- Goodworth A.D., Chandan A., Chase H., Foster E., Francoeur H., Michaud J., Terry K. (2013). Stance width influences frontal plane balance responses to centripetal accelerations. *Gait and Posture*, 37:98-102.
- Goodworth A.D., Melvill Jones G., Block E.W., Fletcher W.A., Paquette C., Hu B., Horak F.B. (2012) Linear and angular control of circular walking in healthy older adults and patients with cerebellar ataxia. *Experimental Brain Research*, 219(1): 151-161.
- Goodworth A.D., Peterka R.J. (2012). Sensorimotor integration for multi-segmental frontal plane balance control in humans. *Journal of Neurophysiology*, 107:12-28.
- Goodworth A.D., Wall III C., Peterka R.J. (2011). A balance control model predicts how vestibular loss subjects benefit from a vibrotactile balance prosthesis. *Proceedings of the IEEE Engineering in Medicine and Biology*, 1306-1309.
- Goodworth A.D., Peterka R.J. (2010). Influence of frontal plane stance width on sensory reweighting and coordination in human balance control. *Journal of Neurophysiology*, 104, 1103-1118.
- Goodworth A.D., Peterka R.J. (2010). Influence of bilateral vestibular loss on spinal stabilization in humans. *Journal of Neurophysiology*, 103, 1978-1987.
- Goodworth A.D., Wall III C., Peterka R.J. (2009). Influence of feedback parameters on performance of a vibrotactile balance prosthesis. *IEEE Transactions on Neural Systems & Rehabilitation Engineering*, 17: 397-409.
- Goodworth A.D., Peterka R.J. (2009). Contribution of sensorimotor integration to spinal stabilization in humans. *Journal of Neurophysiology*, 102: 496-512.
- Goodworth A.D., Wall III C., Peterka R.J. (2007). Application of optimization methods to predict performance of a vibrotactile balance prosthesis. *Proceedings of the IEEE EMBS Neural Engineering*, 510-513.

Interviews

- Goodworth A.D. (May 2024). About 25 Percent of Older Adults in the United States Will Fall Within the Next Year. *Silver Century Foundation*. Silvercentury.org. Author: Mary Jacobs.
- Goodworth A.D. & Saavedra. (Jan 2022). A Discussion on Postural mechanisms in moderate-to-severe cerebral palsy, Podcast for *Journal of Neurophysiology*.

Published Abstracts, Seminars, & Presentations

- Goodworth A.D. (Oct 2024) Bioengineering in rehabilitation and injury causation, *IEEE Central Coast Event*, Goleta, CA.
- Goodworth A.D. (Oct 2024) How perturbed walking is related to standing sensory integration, *Massachusetts Eye and Ear. Vestibular Seminar*. Boston, MA.
- Scheider A, Hellenbrand, C, Rafeedie D, & Goodworth A.D. (Oct 2024). Seminaturlistic Driving Study of Breast Size and Seat Belt Fit, *Western Society for Kinesiology & Wellness*, Oakland, CA.
- Van Haitsma T, Park Jong Min, Nakamura J, Goodworth A.D. (May 2024) Camber differentially affects trained runners at marathon pace, improving running economy in some individuals, *American College of Sports Medicine*, Boston, MA.

- Hellenbrand, C, Rafeedie D, Scheider A, & Goodworth A.D. (April 2024) Investigation of breast size and seatbelt fit, *Westmont Student Research Symposium*, Santa Barbara, CA.
- Goodworth A.D. & Hayashida M. (March 2024) Aging and Mobility: Fundamentals and Frontiers; sponsored by *Westmont Downtown*.
- Goodworth A.D. (Feb 2024) An Experimental Analysis of How Non-Nominal Sitting and Pyrotechnic Seat Belt Pretensioners Interact; *American Academy of Forensic Sciences*, Denver, CO
- Goodworth A.D., Hellenbrand C, Bloom C, Pitzen A, (Feb 2024) What Is Known About Pregnant Occupants and Fetal Risk in Car Crashes; *American Academy of Forensic Sciences*, Denver, CO
- Love K., Goodworth A.D., Karmali F (Nov 2023) A role for vestibular lateral translation cues in postural control. *Society for Neuroscience*, Washington, D.C.
- Goodworth A.D. (Oct 2023) Lecture to class *Physics of Hearing* at Westmont on the topic of Biomechanics and physiology of hearing, Santa Barbara, CA.
- Goodworth A.D. (Oct 2023) Lecture to *Westmont Music Colloquium* at Westmont on the topic of Auditory injury and repetitive movement injury, Santa Barbara, CA.
- Goodworth A.D., Saavedra S. (July 2023) Trunk postural control and adaptability in children with modest to severe brain injury. *Int Society for Posture and Gait Researcher*, Brisbane, Australia.
- Goodworth A.D., Felmlee D., Charry S. (July 2023) The balance control feedback system in transfemoral amputees. *Int Society for Posture and Gait Researcher*, Brisbane, Australia.
- Goodworth A.D. (May and June 2023) Seatbelts, pretensioners, and airbags: How they work and their effect on occupant safety, *CAR2S 8-hour Workshop*, continuing education training for ACTAR credit (Vallejo, CA and Irvine, CA)
- Hellenbrand C., Brown F., Goodworth A.D. (May 2023) The Impact of Seat Belt Pretensioner Deployment on Forward Leaning Occupants, Injury Biomechanics Research Symposium, Ohio State University, OH.
- Bloom C, Hellenbrand C, Pitzen A, Goodworth A.D. (April 2023) Investigations of fetal mortality and injury following a motor vehicle accident, *Westmont Student Research Symposium*, Santa Barbara, CA.
- Goodworth A.D., Hellenbrand C. (March 2023) Occupant responses to seat belt pretensioner deployment in a non-standard sitting position, *Collaborative Research Symposium, Cottage Health Research Institute*, Santa Barbara, CA.
- Breeden K., Cabrera E., Lopez M., Rodriguez M., Sandoval C., Matye T., and Goodworth A.D. (faculty supervisor) (April 2022). Pretensioner firing and effect on restraint systems. *Westmont Student Research Symposium*, Santa Barbara, CA.
- Goodworth A.D., Saavedra S., Quarum J, Brown E. (July 2022) Influence of trunk support and development on the evolution of spontaneous upper extremity behaviors in infants. *Neural Control of Movement*, Dublin, Ireland
- Goodworth A.D., Saavedra S., Reitinger J (July 2022) Signatures of motor learning of trunk posture in moderate-to-severe cerebral palsy. *Neural Control of Movement*, Dublin, Ireland
- Goodworth A.D., Felmlee D, (July 2022). How feedback model parameters in standing relate to performance during perturbed treadmill walking International. *Society for Posture and Gait Research*. Montreal, Canada.
- Howell R, Goodworth A.D., (June 2022) Complex Analysis, Stability, and Cerebral Palsy. *Association of Christians in the Mathematical Sciences*, Azusa, CA.
- Goodworth A.D. (2021). Engineering approaches to identify the reactive postural control system with moderate-to-severe cerebral palsy. *International Symposium on Technology in Rehabilitation: Neuropediatrics* (Techrehab 2021). Virtual Symposium.
- Goodworth A.D., Fitzhugh S, Kratzer A, Lommori M, Rowley M, Robertson J, Saavedra S, (2020) Visual Biofeedback Improves Balance Control ... Until it Doesn't. *American College of Sports Medicine*, Virtual meeting.
- Schramm A, Kent W, Gordon A, Wessman C, Felmlee D, Goodworth AD (2019). Static and Dynamic Balance Comparison within Transfemoral K2 Population Utilizing K3 Componentry, *The New Jersey Academy of*

- Rayappa K, Griffiths R, Goodworth AD (2019). Manual Pulley Perturbation System, *Biomedical Engineering Society*, Philadelphia, PA.
- Goodworth A.D. (2018). Feedback modeling of human stance control and the development of infant posture. *Oregon State University*. Corvallis, OR.
- Goodworth A.D. (2018). Dynamic balance control during human locomotion and turning. *University of Wyoming*. Laramie, WY.
- Goodworth A.D. (2018). Modeling sensorimotor integration of standing posture in single and double link pendulum systems. *University of Colorado*. Boulder, CO.
- Goodworth A.D. (2018). How humans stand up - from a control systems perspective. *Graduate Biomechanics Colloquium, Colorado School of Mines*. Golden, CO.
- Goodworth A.D. (2018). Motor learning concepts in infant posture and in adult manual tracking. *University of Auckland*. Auckland, New Zealand
- Goodworth A.D. (2018). Perturbed balance – Insights into prosthetics and locomotion. *University of Texas. Clinically Applied Rehabilitation Research and Engineering seminar series*. Austin, TX.
- Goodworth AD, Peterka RJ. (2018). Estimating feedback control parameters in a two-segment posture model with realistic noise. *World Congress of Biomechanics*, Dublin, Ireland.
- Goodworth AD, Saavedra S. (2018). Posture development of head and trunk degrees of freedom in infants. *World Congress of Biomechanics*, Dublin, Ireland.
- Saavedra S., Goodworth AD. (2018). Effect of optimal support on infant behaviors during development of sitting, *International Congress on Infant Studies*, Philadelphia, PA.
- Saavedra S, Goodworth AD (2018). Posture control and motor learning in infants and children with cerebral palsy during development of sitting. *American Academy for Cerebral Palsy and Developmental Medicine*, Cincinnati, OH.
- Talari H, Tabrizi P, Morozova O, Burton J, Belschner J, Monfaredi R, Salvador T, Coley C, Alyamani S, Saavedra S, Goodworth AD, Evans S, Cleary K. (2018) Hippotherapy simulator for children with cerebral palsy, *SPIE*, Huston.
- Goodworth AG (2017). Balance, modeling, and sway referencing. *Massachusetts Institute of Technology Sensory-Neural Systems: Spatial Orientation from End Organs to Behavior and Adaptation*
- Lee DJ, Veneri DA, Goodworth AG. (2017) Empowering prosthesis wearers self-management abilities through mobile technology: A usability and acceptability study. *American Orthotic & Prosthetics Association National Assembly*. Las Vegas, NV.
- Goodworth A.D., (2017). Posture Research with Children with severe Cerebral Palsy, *1st Annual Cerebral Palsy Collaborative of Western New England*, Shriners Hospital, Springfield, MA.
- Goodworth A.D., Saavedra S. (2017). Preliminary study of sensorimotor integration in subjects with AIS and controls during perturbed upright sitting, *26th Annual Leon M. Kruger, Guest Lectureship*, Shriners Hospital, Springfield, MA.
- Goodworth A.D., Tetreault K., Klidonas T., Lanman J., Mcguirl A., Warchol E., Saavedra S. (2017). Sway referencing in sitting: visual/vestibular feedback, motor learning, and cognitive influences. *International Society for Posture and Gait Research*. Fort Lauderdale, FL.
- Goodworth A.D., Wu Yen-Hsun, Saavedra S. (2017). Sensory conflict stimuli as a window into emergence of posture control mechanisms in infants. *International Society for Posture and Gait Research*. Fort Lauderdale, FL.
- Saavedra S, Parsonage L; Barnes S, Shah S; Duque J, Wu, Y; Goodworth AD (2016). Effect of optimal support on infant behaviors during development of sitting, *CT Physical Therapy Association*.
- Peterka R.J. and Goodworth A.D. (2016). Model-based Analysis of Condition-dependent Vestibular Contributions to Human Balance Control. *Biomechanics and Neural Control of Movement*, Sterling, OH.
- Saavedra S., Wu Yen-Hsun, Goodworth A.D. (2016). Characterization of sensory integration during development

of trunk posture control. *American Physical Therapy Association Combined Sections Meeting*. Anaheim, CA

- Duncan K, Saavedra S., Goodworth A.D. (2016). Infant Visual Attention and Postural Control: A Comparison with the Segmental Assessment of Trunk Control (SATCo). *American Physical Therapy Association Combined Sections Meeting*. Anaheim, CA
- Goodworth A.D. (2016). Walking balance – perturbation methods and recent findings *Carnegie Mellon University. Bipedal Locomotion Seminar*. Pittsburg, PA.
- Goodworth A.D. (2016, Sep). Novel approaches to measure balance responses during gait *Massachusetts Eye and Ear. Vestibular Seminar*. Boston, MA.
- Goodworth A.D. (2016). Standing balance and the integration of galvanic vestibular stimulation. *University of Washington. Virginia Merrill Bloedel Hearing Research Center*, Seattle, WA.
- Goodworth A.D. (2016). How is galvanic vestibular stimulation used during stance? *Massachusetts Eye and Ear. Vestibular Seminar*. Boston, MA.
- Goodworth A.D., Veneri D, Burger J, Lee D. (2015) Preliminary Design and Evaluation of a Knowledge Based Outcome Measure for Patients with a Lower Limb Prosthesis. *International Society for Prosthetics and Orthotics*. Lyon, France.
- Peterka R.J. and Goodworth A.D. (2015). Utilizing system identification methods and galvanic vestibular stimulation to understand the vestibular contribution to balance control. *Association for Research in Otolaryngology*. Baltimore, Maryland.
- Goodworth A.D., Saavedra S. (2015). Characterizing sensorimotor integration for trunk control in children with moderate-to-severe cerebral palsy. *Kentucky spinal cord and Head Injury Research Trust Symposium* Louisville, KY
- Saavedra S., Goodworth A.D. (2015). Changes in sensory integration for postural control prior to the acquisition of sitting: A longitudinal infant study. *Kentucky spinal cord and Head Injury Research Trust Symposium*, Louisville, KY
- Peterka R.J. and Goodworth A.D. (2014). Balance control dynamics and sensory reweighting investigated using combinations of pseudorandom surface-tilt and galvanic-vestibular stimuli. *International Society for Posture and Gait Research*. Vancouver, Canada.
- Thompson L.A., Goodworth A.D., Haburcakova C., Merfeld D.M., Wall C., Lewis R.F. (2014). Sensorimotor integration used for rhesus monkey postural control. *International Society for Posture and Gait Research*. Vancouver, Canada.
- Thompson L.A., Haburcakova C., Wall C., Goodworth A.D., Merfeld D.M., Lewis R.F. (2014). The severity of vestibular dysfunction influences postural compensation. *International Society for Posture and Gait Research*. Vancouver, Canada.
- Baseler C., Goodworth A.D., Charry S. (2014). STEM Collaboration: LIMBS International, Hartford Public Schools & University of Hartford. *Connecticut STEM Conference*. Hartford, CT.
- Veneri D., Goodworth A.D., and Flow E., (2014). Prosthetic Training across Borders, *LIMBS Summit 2014*, El Paso, TX.
- Goodworth AD (2014). Introduction to Motor Control and Rehabilitation. *Training workshops to Ugandan and Kenyan prosthetics technologists in Kampala, Arua, Lira, and the Kenyatta Medical Training Center, Nairobi, Kenya*.
- Perrone K., Pillsbury M., Smollen A., Goodworth A.D., Kunsman M. (2013) Effects of visual focus and gait speed on balance. *CT Physical Therapy Association*. New Haven, CT.
- Goodworth A.D. and Peterka R.J. (2013) Identification of sensory contributions to stance control in transtibial amputees. *American Orthotic & Prosthetics Association National Assembly*. Orlando, FL.
- Kunsman M., Goodworth A.D. (2013) Influence of instant total contact casts on balance. *American Physical Therapy Association Combined Sections Meeting*. San Diego, CA.

- Horak, F., Goodworth A.D., Mancini M., Paquette C., Block E.W., Fletcher W.A., Melvill Jones G. (2013) Turning is more Difficult than Walking. *Sensing Motion for Action: Tribute to Geoffrey Melvill Jones*. Montreal, Quebec, Canada.
- Goodworth A.D. (2013). Investigations into Vestibular Prostheses and Vestibular Contributions to Stance Control. *Hartford HealthCare Rehabilitation Network*. West Hartford, CT.
- Crane B., Certo C., Ghosh S., Goodworth A.D., McCafferty L., Liquori M. (2012). Will a floor covering surface mitigate injury if falls occur? *CT Physical Therapy Association*, Cromwell, CT.
- Goodworth A.D., and Peterka R.J. (2012). Feedback mechanisms for frontal-plane balance control are strongly influenced by stance width. *International Society for Posture and Gait Research*. Trondheim, Norway.
- Goodworth A.D. (2011). Modeling Neural Processing of Vibrotactile Feedback for Balance Control. *University of Pittsburg Physical Therapy Department Seminar*. Pittsburg, PA.
- Goodworth A.D. (2011). Vestibular Contribution to segmental orientation in human balance control. *Massachusetts Eye and Ear. Vestibular Seminar*. Boston, MA.
- Goodworth A.D. (2011). Insight into the Human Balance Control System using a Multi-linkage Model. *Yale Robotics Seminar*. Yale University, New Haven, CT.
- Goodworth A.D., and Peterka R.J. (2009). Evidence for sensory integration in spinal stabilization. *International Society for Posture and Gait Research*. Bologna, Italy.
- Goodworth A.D., and Peterka R.J. (2009). Model-based interpretation of mechanisms contributing to spinal stability in humans. Satellite Symposium: *Basic mechanisms underlying balance control under static and dynamic conditions*. *International Society for Posture and Gait Research*. Pavia, Italy.
- Goodworth A.D. (2009). An Introduction to Human Balance Control. *Hayes and Associates Forensic Engineering*. Corvallis, OR
- Goodworth A.D., Wall III C., Peterka R.J. (2007). Application of optimization methods to predict performance of a vibrotactile balance prosthesis. *Northwest Ear, Nose, and Throat Conference*. Portland, OR.
- Goodworth A, Remanis I, Berger J (2004). The free-edge singularity dominated zone in copper-tungsten graded materials. *IABEM International Conference on Boundary Element Methods*. Minneapolis, MN.

Academic Teaching Activities

2019-Present *Westmont College*

Engineering Courses: Control Systems, Instrumentations and Measurements, Engineering and the Liberal Arts, Statics Programming (MATLAB & Excel), Engineering Materials

Kinesiology Courses: Causes of Injury: Anatomy, Sports, & Forensics, Injury Biomechanics, Kinesiology Research, Basic Physics Primer, Biomechanics Lecture and Laboratory

2011-2019 *University of Hartford*

DPT & MSPO Courses: Motor Control Lecture and Laboratory, Scientific Inquiry II and III, Doctoral Research, Neuroscience Laboratory, Freshman Dialogue, Freshman Pre-Physical Therapy Course, Biomechanics Laboratory, Kinesiology Laboratory, Gross Anatomy Laboratory, and Foundations of Professional Practice.

Engineering Courses: Thermo-Fluids, Engineering Biomechanics Lecture, Technical Advisor for Engineering Senior Design

2002-04 *Colorado School of Mines Engineering, Teaching Assistant*

Engineering Courses: Multi-disciplinary Engineering Laboratory, Machine Design

Honors

2020 Paul C. Wilt Phi Kappa Phi Lecture Series Awardee at Westmont College
2015 Belle K. Ribicoff Junior Faculty Prize at University of Hartford
2013 American Physical Therapy Assoc. Combined Sections Meeting in Wound Care Special Interest Group Research Award Recipient
2011 Humanities Fellowship Award Recipient for session on Creativity from University of Hartford for experimentation and modeling of human balance control
2010 J.M. Lee Memorial Graduate Scholarship Recipient
2007 First place winner in Oregon Health & Science University Student Research Forum presentations
2007 Institute of Electrical and Electronics Engineers (IEEE), Engineering in Medicine and Biology Society's Neural Engineering Conference Travel Fellowship Award Recipient