CURRICULUM VITAE

Adam Goodworth
Westmont College
955 La Paz Road, Santa Barbara, CA 93108

Education

2005 -2010 Oregon Health & Science University
Portland, OR
Ph.D. in Biomedical Engineering

2002 -2004 Colorado School of Mines
Golden, CO
M.S. in Engineering Systems

1998 -2002 Colorado School of Mines
Golden, CO
B.S. in Engineering (mechanical specialty)
Passed Fundamentals of Engineering Exam 2001

Additional training

2012 -2014 Newington Certificate Program
Cromwell, CT
Certificate in Prosthetics

2010 Oregon Health & Science University
Portland, OR
Postdoctoral Training in Neurology Department

Academic Positions

2019-present Associate Professor
Westmont College, Santa Barbara, CA

2016-2019 Associate Professor, Tenured
University of Hartford, West Hartford, CT

2010-2016 Assistant Professor, Tenure-track
University of Hartford, West Hartford, CT

2018 Visiting Scholar, Sabbatical in Mechanical Engineering Department
Baylor University, Waco, TX

Other Employment

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

RESEARCH

Publications (peer-reviewed)

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 AD, Wu Y, Felmlee 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.

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 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.

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, Chapter 16: Biomechanics and biomechatronics in sports, exercise, and entertainment Chapter 12 in Biomechatronics. Popovic MB (Ed), Elsevier, UK.

Other Publications

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.

Provisional Patents

Adam Goodworth (2010). *Omni-directional treadmill*. USPTO Application No. 61381983, Provisional Patent, September.

Presentations (peer-reviewed)

Karen Rayappa, Riley Griffiths, Adam Goodworth (Oct 2019). Manual Pulley Perturbation System, *Biomedical Engineering Society*, Philadelphia, PA.

Saavedra S, **Goodworth AD** (Oct 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.

Goodworth AD, Peterka RJ. (July 2018). Estimating feedback control parameters in a two-segment posture model with realistic noise. *World Congress of Biomechanics*, Dublin, Ireland.

Goodworth AD, Saavedra S. (July 2018). Posture development of head and trunk degrees of freedom in infants. *World Congress of Biomechanics*, Dublin, Ireland.

Saavedra S., **Goodworth AD.** (July 2018). Effect of optimal support on infant behaviors during development of sitting, *International Congress on Infant Studies*, Phillidephia, PA.

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. (Feb 2018) Hippotherapy simulator for children with cerebral palsy, SPIE, Huston.

Lee DJ, Veneri DA, **Goodworth AG**. (Sep, 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., Tetreault K., Klidonas T., Lanman J., Mcguirl A., Warchol E., Saavedra S. (June, 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. (June, 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** (Sep, 2016) Effect of optimal support on infant behaviors during development of sitting, *CT Physical Therapy Association*.

Peterka R.J. and **Goodworth A.D.** (June 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**. (Feb, 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**. (Feb, 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., 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.

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.

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. (also presented at *Symposium on Advanced Wound Care*. Denver, CO, May 2013).

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., and Peterka R.J. (2009). Evidence for sensory integration in spinal stabilization. *International Society for Posture and Gait Research*. Bologia, 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., 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.

Seminars and other Presentations

Goodworth A.D. (2018, May). Feedback modeling of human stance control and the development of infant posture. *Oregon State University*. Corvallis, OR.

Goodworth A.D. (2018, March). Dynamic balance control during human locomotion and turning. *University of Wyoming.* Laramie, WY.

Goodworth A.D. (2018, March). Modeling sensorimotor integration of standing posture in single and double link pendulum systems. *University of Colorado.* Boulder, CO.

Goodworth A.D. (2018, March). How humans stand up - from a control systems perspective. *Graduate Biomechanics Colloquium, Colorado School of Mines.* Golden, CO.

Goodworth A.D. (2018, Feb). Motor learning concepts in infant posture and in adult manual tracking. *University of Auckland.* Auckland, New Zealand

Goodworth A.D. (2018, Feb). Perturbed balance – Insights into prosthetics and locomotion. *University of Texas. Clinically Applied Rehabilitation Research and Engineering seminar series*. Austin, TX.

Goodworth A.D., (2017, June). 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, May). 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. (2016, Sep). 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, March). Standing balance and the integration of galvanic vestibular stimulation *University of Washington. Virginia Merrill Bloedel Hearing Research Center,* Seattle, WA.

Goodworth A.D. (2016, Jan). How is galvanic vestibular stimulation used during stance? *Massachusetts Eye and Ear. Vestibular Seminar*. Boston, MA.

Goodworth A.D., Saavedra S. (2015, June). 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, June). 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

Baseler C., **Goodworth A.D.**, Charry S. (2014, October). STEM Collaboration: LIMBS International, Hartford Public Schools & University of Hartford. *Connecticut STEM Conference.* Hartford, CT.

Veneri D., **Goodworth A.D**., and Flow E., (2014, July). Prosthetic Training across Borders, *LIMBS Summit 2014*, El Paso, TX.

Horak, F., **Goodworth A.D**., Mancini M., Paquette C., Block E.W., Fletcher W.A., Melvill Jones G. (2013, July) Turning is more Difficult than Walking. *Sensing Motion for Action: Tribute to Geoffrey Melvill Jones*. Montreal, Quebec, Canada.

Goodworth A.D. (2013, March). Investigations into Vestibular Prostheses and Vestibular Contributions to Stance Control. *Hartford HealthCare Rehabilitation Network*. West Hartford, CT.

Goodworth A.D. (2011, July). Modeling Neural Processing of Vibrotactile Feedback for Balance Control. *University of Pittsburg Physical Therapy Department Seminar*. Pittsburg, PA.

Goodworth A.D. (2011, May). Vestibular Contribution to segmental orientation in human balance control. *Massachusetts Eye and Ear. Vestibular Seminar*. Boston, MA.

Goodworth A.D. (2011, March). Insight into the Human Balance Control System using a Multi-linkage Model. *Yale Robotics Seminar*. Yale University, New Haven, CT.

Goodworth A.D. (2009, Aug). An Introduction to Human Balance Control. *Hayes and Associates Forensic Engineering*. Corvallis, OR

External Grant Activity

Current external awards

9/2019 - 8/2021 **Department of Defense OPORP: OP180014**
$350,000
Direct quantification of balance amongst limited community ambulators using microprocessor prosthetic knees
Co-PIs: Adam D. Goodworth and Duffy Felmlee
Role: Quantify reactive balance responses and balance mechanisms during perturbed stance and perturbed walking when low mobility ambulators use advanced microprocessor knee technology.

7/2018 - 6/2021 **National Science Foundation DARE #1803714**
$299,556
Unraveling posture control in severe cerebral palsy
Co-PIs: Adam D. Goodworth and Sandra Saavedra
Role: Apply engineering control systems to identify mechanisms of segmental posture control in children and teens with moderate-to-severe CP using feedback modeling with external perturbations and sitting sway referencing.

Completed external awards

6/2014 - 5/2018 **National Institutes of Health R03 Grant DC013858**
$416,230
Sensory contributions to typical and atypical development of trunk control
Co-PIs: Sandra Saavedra and Adam D. Goodworth (submitted under Saavedra)
Role: Implement sensorimotor integration testing, analysis, and modeling in infants and children with cerebral palsy.

9/2011 - 8/2015 **National Institutes of Health R01 Grant DC010779**
$112,462 subcontract to University of Hartford
$1,230,547 total grant to Oregon Health & Science University
Vestibular contribution to the control of human upright stance
PI: Robert J. Peterka, Ph.D. at Oregon Health & Science University
Co-I: Adam D. Goodworth
Role: Use mathematical modeling to analyze clinical balance tests with and without artificial vestibular stimulation on patients with and without vestibular disorders.

4/2014 - 4/2016 **Scoliosis Research Society**
$10,000
Segmental sensoriomotor control of trunk posture in adolescent idiopathic scoliosis
Co-PIs: Adam D. Goodworth and Sandra Saavedra
Role: Quantify sensory reliance and spinal segmental control in adolescents with idiopathic scoliosis using experimentation and sensorimotor integration modeling.

5/2015 - 5/2016 **CT Space Grant College Consortium Graduate Research Fellowship**
$10,000
A longitudinal description of sensorimotor adaptations for posture control
PI: Alysha Kaminski (supervised by Sandra Saavedra and Adam D. Goodworth)
Role: Co-supervise Alysha Kaminski (graduate student in DPT program) in experimental design and data analysis of an investigation of adaptions in infants learning about gravity and posture control.

5/2011 - 5/2013 **Saint Francis Medical Center / University of Hartford** (Jointly funded)
Balance and Mobility Research Initiative
$15,000
A gel surface to mitigate injury when falls occur
Co-PIs: Barbara Crane and Lorraine McCafferty
Co-Is: Adam D. Goodworth, Catherine Certo, and Suhash Ghosh
Role: Determine if floor pads can reduce injury when falling without increasing fall risk.

Internal Grant Activity

Summary of awarded internal grants

2017- 2018 **ENHP Institute of Translational Research Seed Grant**
$4,500
Segmental trunk support for hippotherapy
PI: Adam D. Goodworth
Role: Design and pilot test a trunk support device so that children more severe disabilities can participate in hippotherapy, recreational riding, and at-home perturbation-training

2017 **University Coffin Grant**
$3,000
Sensorimotor integration for posture control in the developing infant
PI: Adam D. Goodworth
Role: Analyze longitudinal posture data from infants during the development of sitting posture.

2016- 2017 **Growing Partnership Award (Strategic Goal II)**
$10,700
Customized Support Devices in Electric Cars for Children with Disabilities
PIs: Andrea Kwaczala, Mary Arico, and Sandra Saavedra
Co-Is: Adam D. Goodworth & Duffy Felmlee
Role: Facilitate engineering design with clinical work to modify "Go-Baby-Go" cars for children with severe motor impairments.

2016- 2017 **ENHP Institute of Translational Research Seed Grant**
$3,000
Isolating vestibular contributions to sitting through a sway-referenced backboard system
PI: Adam D. Goodworth
Role: Develop a test to identify how vestibular function contributes to sitting posture

2014 - 2015 **ENHP Institute of Translational Research Sprout Grant**
$7,000
Prosthetics training across borders
Co-PIs: Adam D. Goodworth and Diana Veneri
Role: Collect, analyze, and interpret data from amputees regarding rehabilitation education and comprehension. Sites include Peru, Kenya, Uganda, and Connecticut.

2014 **Summer Stipend**
$2,500
Crafting prosthetic education tools for clinics and patients in developing countries
PI: Adam D. Goodworth
Role: Expand existing global prosthetic education topics to include mechanics and maintenance.

7/2012 - 6/2013 **Greenberg Junior Faculty Grant**
$8,850
Reducing falls through mathematical equations
PI: Adam D. Goodworth
Role: Develop models of balance to identify how sensory integration changes with stance width.

2011 - 2012 **ENHP Institute of Translational Research Seed Grant**
$2,000
Influence of an ankle orthoses on dynamic balance control
PI: Adam D. Goodworth
Co-I: Michelle Kunsman
Role: Integrate video motion capture into a rotating / perturbing treadmill system.

2011 **Summer Stipend**
$2,500
Identification of brain structures and the rules which govern coordination of body segmental motion during curvilinear walking
PI: Adam D. Goodworth
Role: Determine how humans achieve curvilinear walking and how disease states influence this task.

Honors and Awards

2015	Belle K. Ribicoff Junior Faculty Prize at University of Hartford
2015-2016	National Institutes of Health Loan Repayment Program Award Recipient
2013	Research award by American Physical Therapy Assoc. Combined Sections Meeting in Wound Care Special Interest Group
2011	Awarded Humanities Fellowship for session on Creativity from University of Hartford for experimentation and modeling of human balance control
2010	Awarded J.M. Lee Memorial Graduate Scholarship
2008	Awarded National Science Foundation funding to attend workshop at Mathematical Biosciences Institute
2007	First place winner in Oregon Health & Science University Student Research Forum presentations
2007	Awarded Institute of Electrical and Electronics Engineers (IEEE), Engineering in Medicine and Biology Society's Neural Engineering Conference Travel Fellowship
2006-2007	Awarded National Institutes of Health Training Grant T32DC005945 to test performance of vibrotactile balance prosthesis, PI: Richardson M, Advisor: Peterka RJ.
1998-2002	Awarded President's Scholarship at Colorado School of Mines

TEACHING

Courses Taught

Westmont College

2019	Biomechanics Lecture (Fall semester) Enrollment: 30 students
2019	Biomechanics Laboratory (Fall semester) Enrollment: 30 students
2019	Engineering and the Liberal Arts Enrollment: 22 students

University of Hartford

2017-19	Thermo-Fluids (engineering undergrad program) Average Enrollment: 18 students
2010-18	Motor Control Lecture (DPT program) Average Enrollment: 38 students
2010-18	Motor Control Laboratory (DPT program) Average Enrollment: 38 students
2010-18	Scientific Inquiry II (DPT & MSPO programs) Average Enrollment: 6 students
2011-19	Scientific Inquiry III (DPT & MSPO programs) Average Enrollment: 6 students
2011-19	Doctoral Research (DPT program) Average Enrollment: 6 students
2011,18	Neuroscience Laboratory (DPT program) Enrollment: 38 students
2011,12,15	Freshman Dialogue (health science undergrad program) Average Enrollment: 10 students
2016,17	Freshman Pre-Physical Therapy Course (health science undergrad) Enrollment: 35 students
2014	Biomechanics (Engineering undergrad program) Enrollment: 24 students

2013	Biomechanics Laboratory (DPT& MSPO programs) Enrollment: 65 students
2011-2019	Kinesiology Laboratory (DPT& MSPO programs) Average Enrollment: 67 students
2018,19	Gross Anatomy Laboratory (DPT& MSPO programs) Average Enrollment: 67 students
2018	Foundations of Professional Practice (DPT program) Enrollment: 40 students

Colorado School of Mines Engineering

2002-04	Multi-disciplinary Engineering Laboratory (Teaching Assistant) Enrollment: 25 students
2002-03	Machine Design (Teaching Assistant) Enrollment: 25 students

Mentored Researchers at University of Hartford

5/2016- 17	Dr. Seyoung Kim, Research Scientist from Korean Institute of Machinery and Materials completing lower extremity exoskeleton design project.
2014-2016	Dr. Yen Hsun-Wu, Completed 2-year postdoc in the Balance Control and Pediatric Balance Lab. Co-mentorship with Dr. Sandra Saavedra.

Mentored Graduate Students at University of Hartford

2016	Kimberly Tetreault, U Hartford DPT student. Supervised summer project creating lightweight backboard system for testing sitting posture in children.
2015-2016	Alysha Kaminski, DPT. U Hartford. Co-supervised behavior coding and visual-vestibular testing in children with CP. Recipient of CT Space Grant Graduate Fellowship.
2014- 2015	Kerian Duncan, M.S. (graduated in Spring 2015). Current student in the DPT program at the U Hartford. M.S. committee member. Thesis title, "Infant visual attention and postural control: A comparison with the segmental assessment of trunk control".
2011-2013	Lara Thompson, Ph.D. (graduated in 2013). Harvard-MIT Division of Health Sciences and Technology. PhD committee member. Dissertation title, "A study of the effects of sensory state on Rhesus monkey postural control". Currently faculty member at University of DC.

Mentored Undergraduate Students in Research/Internships at Westmont College

Primary or Technical Advisor

- Balance and amputee function (1 student, Fall 2019)

Mentored Undergraduate Students in Research/Internships at University of Hartford

Primary or Technical Advisor

Individual Internships

9/2011-2019 ~30 students completed research projects in one of the following areas:

- Three-dimensional camera system setup and manual perturbation system.
- Modeling and analyzing trunk and head kinematics with different external support.
- Trunk support design to help feeding of children with disabilities in developing countries.
- Virtual reality and surface sway referencing for sitting posture control.
- Sensory contributions to adolescents with idiopathic scoliosis.
- Calibration of a video motion capture system for 2-D kinematic analyses.
- Modeling and analysis of balance responses to centripetal accelerations.
- Design/building a platform for an omni-directional treadmill.
- Analysis of electromyography in shoulder muscles during Y-balance tests.
- Analysis of interface pressure when sitting on wheelchair and bed surfaces.
- Data analysis for COQ10 in Statin Myopathy.

Engineering Senior Design projects (typically 3-4 students / project)

8/2018-5/2019 Sensor implementation for video game system for rehab and education purposes.

8/2017-5/2018 Design of video game systems for children with severe cerebral palsy using Arduino and Scratch Programming

9/2016-5/2017 Vibration feedback for lower limb prosthetic users, encoding changes in force under the prosthetic foot.

9/2014-5/2015 Position feedback control of Omni-directional treadmill with user interface for motion control. (Awarded first place amongst 30 projects)

1/2012-5/2012 Development of a wide-bandwidth portable potentiometer-based motion capture system with noise characterization.

1/2011-5/2011 Instrumentation and geometric design for measuring body sway using portable potentiometer-based motion capture.

1/2011-5/2011 Integration and control of a motor to drive a moving platform to deliver perturbations while walking on a treadmill.

Additional teaching / workshops

4/2017 Provided lecture and article review facilitation for graduate class at MIT *Sensory-Neural Systems: Spatial Orientation from End Organs to Behavior and Adaptation* (instructor: Faisal Karmali & Larry Young, class: HST.514[J])

4/2014 *Introduction to Motor Control and Rehabilitation.* Provided a training workshop to Ugandan and Kenyan prosthetics technologists in Kampala, Arua, Lira, and a LIMBS International training workshop in Kenyataan Medical Training Center, Nairobi, Kenya.

Lectures at University of Hartford

2010 *Balance Control and Biomechanics*, lecture, BE301 Engineering Biomedical Engineering Undergrad Biomechanics

2014-16,18 *Balance Control and Biomedical Engineering*, lecture to Biomedical Engineering Undergrad Seminar

2014,16 *Motor Control and Learning for Prosthetics*, lecture to Neuroscience, MSPO II students

2012 Creativity in Science & Engineering, lecture to Humanities Honors Seminar on Creativity (HONB) for Hillyer College

SERVICE

Service Activity at University of Hartford

University level

11/2016-2019 *Faculty Senate Committee member*

- Represents college in policy and decisions relating to academic and welfare at the University level
- Curriculum Review committee (monthly meetings to review curriculum related decisions at the university)
- Led initiate to revise research and external grants policies

11/2018 *Director of Center for Clinical Sciences Innovation*

- I am leading the creation and development of this center which is starting in 2018/2019. The goal is to combine Rehabilitation Sciences and Engineering for innovative projects for faculty, clinics, students, and enhanced recruitment.

2017 *Greenberg Junior Faculty Selection Committee*

2013, 2016-18 *Human Subjects Committee member*

- Review research proposal across the University for Adherence to ethical principles in research

4/2017-12/2017 *Steering Committee for University's Facilities Master Planning Committee*

- Provided input to help direct priorities for facilities across the university

6/2016-8/2016 *Sub-committee member on creation of revised Annual Faculty Evaluation process*

- Help define reasonable and transparent procedures to merit pay evaluation and dissemination across colleges.

College level (Education, Nursing, and Health Professions)

9/2016-2019 *Promotion & Tenure (P&T) committee member*

- Leads college level P&T guidelines, reviews faculty with college during the P&T, and provides recommendations to the Dean.
- Help define criteria for new clinical faculty appointments.

9/2015-8/2017 *Advisory Council on Research*

- Committee to steer research initiates and review internal grant funding applications for the college and honor′s students′ projects

9/2012–2019 *Academic Standing Committee*

- Evaluate and vote on student appeals to academic decisions, such as dismissal.

1/2011-5/2012 *Director of Center for Health, Care, and Well-being*

- Helped in vision casting of the Center and facilitated inter-disciplinary and translational research at college, including pilot grants.
- Initiated and facilitated university partnership with LIMBS International, a non-profit prosthetics organization.
- Initiated off-site partnerships and presentations on campus

Department

9/2016- 2019 *Graduate Program Admissions Committee member*

- Evaluate applications for the DPT program and provide recommendation for admission.

8/2010-9/2015 *Physical Therapy Faculty Research Committee Chair*

- Facilitated department research vision, organized research dissemination events each semester, organized presentations to faculty, supported department resource allocation to research and Scientific Inquiry courses.

2012-2013 *Co-directed the development of the Pediatrics Balance Lab*

- Lab integrates electromyography, 3-D kinematics, and a custom design-build servomotor tilting platform for identifying sensory reliance. Co-director: Sandra Saavedra.

5/2012-5/2013 *Accreditation*

- Supported Physical Therapy program's self-study report for accreditation

2010-2019 *Director and developer of the Human Balance Control Lab*

- Lab can assess walking balance on an Omni-directional treadmill system. Lab has 2-D motion capture, tilt sensors, and custom design-build motor driven platform that rotates a treadmill.

2011-2019 *Student advising*

- Advise undergraduate students with schedule (~12- 15 per year).

2010-2019 *Department presentations*

- Rotating department member at orientation, parents' weekend, and lab tours for prospective students.

Faculty Search Committees

2017	Clinical faculty prosthetic & orthotics
2016	Tenure-track faculty physical therapy
2015	Clinical faculty prosthetic & orthotics (Chair of search committee)
2014	Tenure-track faculty mechanical engineering
2014	ETC faculty joint prosthetic & orthotics / physical therapy
2012	Tenure-track faculty prosthetics & orthotics
2011	Tenure-track faculty prosthetics & orthotics
2011	ETC faculty prosthetics & orthotics

University Community

2017-2018	Project mentor for *University High School STEM* student teams working on a capstone project for hippotherapy with trunk support for children with disabilities
2/2014-2019	Faculty representative for University of Hartford's *Fellowship of Christian Athletes* Club
2013-2014	Project mentor and University liaison to *University High School STEM* student teams developing upper extremity prostheses in fulfillment of capstone projects with *Learning for LIMBS*, Hartford, CT

10/2014	Presentation at Hawktober weekend "The University of Hartford at the Cutting Edge: A review of some of the most interesting research going on at the university"
2012, 13	Presented at *Crossing the Bridge* to incoming freshman
2012	Presented at *Connecticut STEM Conference* in a "lunch and learn" session to teachers and administrators about engineering and prosthetics in higher education
2012	Presented at *Our Campus Creates* to incoming freshman

Community Service

2019	Volunteer AYSO soccer coach, CA, 10-11 yr olds, Goleta, CA.
2018	Volunteer children's football coach, 8-9 yr olds, Simsbury, CT.
2017	Volunteer children's soccer coach, 7 yr olds, Simsbury, CT
2017	Volunteer youth leader for outreach school event in Hartford, The Hartford Project
2015-2018	Member of Mission and Outreach Team at Wintonbury Church, Bloomfield, CT • Support budgetary and decision making efforts • Led one-week Missions Trip to Dominican Republic with Kids Alive Int.
1/2012-12/2017	Volunteer Youth leader for children, Calvary Church, West Hartford, CT • Teach at weekly meetings to children and teens.
3/2014-4/2014	Distributed rehabilitation material and trained prosthetists at four clinics in Uganda and one hospital in Kenya
8/2013, 8/2014	Volunteer teacher for Wintonbury Church Summer Faith Quest 1-week youth program, Bloomfield, CT
6/2011-6/2013	Volunteer children's teacher at Valley Baptist Church, Avon, CT
5/2013, 9/2013	Volunteer at Hartford's Women of Vision Chapter Walk for Water Event, Simsbury, CT
11/2012	Volunteer at Addison's House, Safe Home for Women, New Britain, CT
5/2012	Delivered supplies to staff at Bongolo Hospital in Lebamba, Gabon and CVM (humanitarian non-profit) staff in Soroti, Uganda.
7/2011-10/2011	Volunteer children's soccer coach, Simsbury, CT
8/2008-1/2010	Volunteer teacher of English as a second language to immigrants and refugees, Portland, OR

Service / Membership in Professional Organizations

2008-present	Member, *International Society for Posture and Gait Research* Leadership roles • External Relations Committee member since 2016 • Presented "A practical approach for modeling sensory stimulations and balance" at Summer School Workshop, Montreal, CA, July 2016
2011	Member, *IEEE Engineering Medicine & Biology Society*
2010	Member, *Society for the Neural Control of Movement*
2016- 2017	Ambassador for National Institutes of Health Loan Repayment Program

National and International level grant reviewer

2019	Reviewer for Small Projects in Rehabilitation Research, *Veterans Affairs Office* of Research and Development
2017	Reviewer for *Action Medical Research,* a UK-based charity supporting medical research

2017, 19 Review panel member for *National Institutes of Health*, National Institute on Disability and Rehabilitation Research, US

2017 Reviewer for *Netherlands Organization for Scientific Research*, Applied and Engineering Sciences domain.

Peer-review for Journals

2018 Reviewer for Journal of Pediatric Rehabilitation Medicine
2010-2017 Reviewer for Journal of Neurophysiology
2017 Reviewer for IEEE Transactions on Biomedical Engineering
2016 Reviewer for Archives of Physical Medicine and Rehabilitation
2016 Reviewer for PLOS ONE
2016 Reviewer for Disability and Rehabilitation
2015 Reviewer for Journal of Sports Sciences
2015 Reviewed for Journal of Biomechanics
2010, 14 Reviewer for Experimental Brain Research Journal
2014, 2018 Reviewed for Journal of Gait and Posture
2013 Reviewed for Journal of Haptics in Rehabilitation and Neural Engineering
2013 Reviewed for Journal of Bioengineering & Biomedical science
2012 Reviewed for IEEE Biomedical Robotics and Biomechatronics Conference

CONTINUING EDUCATION

2012-2014 Newington Certificate Program in Prosthetics & University of Hartford MSPO program
8 courses in prosthetics (26 credits) with 3.83 GPA and 250+ internship hours.
Cromwell and West Hartford, CT.

2013 LIMBS International Summit
Presentations/Discussions on development of prosthetics devices for developing countries El Paso, TX

2013 American Orthotic Prosthetic Association World Congress
Workshops on appropriate technologies and concerns related to prosthetics work in developing countries. Orlando, FL

2012 American Orthotic Prosthetic Association
Workshops on ankle foot orthoses and balance Boston, MA

2011 IEEE Engineering Medicine and Biology
Workshop on Motor Control Principles in Neuro-robotics Boston, MA

2011 Vestibular Rehabilitation in the Medically Complex Elder
Jennifer M. Bottomley Rocky Hill, CT

2008 National Science Foundation
Mathematical Biosciences Institute: Biomechanics – muscle and whole body
Columbus, OH