Curriculum Vitae

Michael Lawrence Madigan
Professor
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EDUCATION

Ph.D.	Biomedical Engineering, Virginia Commonwealth Univ., Richmond, VA. 2001
M.S.	Bioengineering, Texas A&M University, College Station, TX. 1996
B.S.	Bioengineering, Texas A&M University, College Station, TX. 1994

PROFESSIONAL EXPERIENCE

2017 – Present	Professor, Department of Industrial and Systems Engineering, Virginia Tech
2017 – Present	Editor-in-Chief, *Journal of Applied Biomechanics*
2017 – Present	Affiliate member, Department of Biomedical Engineering and Mechanics, Virginia Tech
2017 – Present	Affiliate member, Center for Gerontology, Virginia Tech
2017 – Present	Core member, Occupational Safety and Health Research Center, Virginia Tech
2014 – 2017	Professor, Department of Biomedical Engineering, Texas A&M University
2013 – 2017	Associate Editor, *Medicine and Science in Sports and Exercise*
2013 – 2014	Professor, Department of Engineering Science and Mechanics, Virginia Tech
2013 – 2014	Affiliate member, Fralin Translational Obesity Research Center, Virginia Tech
2013 – 2014	Affiliate member, Grado Department of Indust. and Sys. Eng., Virginia Tech
2012 – 2016	Associate Editor, *Journal of Applied Biomechanics*
2010 – Present	Principal Consultant, Madigan Engineering
2009 – 2012	Secretary and Membership Chair, *American Society of Biomechanics*
2007 – 2013	Associate Professor, Department of Engineering Science and Mechanics, Virginia Tech
2002 – 2014	Affiliate member, Department of Mechanical Engineering, Virginia Tech
2001 – 2014	Affiliate member, Center for Gerontology, Virginia Tech
2001 – 2014	Core member, Virginia Tech-Wake Forest School of Biomedical Engineering and Sciences
2001 – 2007	Assistant Professor, Department of Engineering Science and Mechanics, Virginia Tech
2000	Instructor, Department of Mechanical Engineering, Virginia Commonwealth University
1996 – 1998	Research Associate, Lynntech, Inc., College Station, Texas

RESEARCH INTERESTS

My group's broad research interests are injury prevention through the study of the dynamics and neuromuscular control of human movement. We focus most of our work on balance/falls as well as low back pain/injury due to their high prevalence and impact on society. Both human subjects testing and computational modeling are utilized in our work to address various research questions.

TEACHING EXPERIENCE

- ESM 2104 Statics (F2002, Sp2005)
- ESM 2204 Mechanics of Deformable Bodies (F2001, Sp2003, Sp2004, Sp2006, Sp2011, Sp2012, Sp2013, Wi2014)
- ESM 4204 Musculoskeletal Biomechanics (Sp2002, Sp2003, Fa2003, Fa2004, Fa2005, Fa2006, Fa2007, Fa2008, Fa2009, Fa2010, Fa2011, Fa2012, Fa2013)
- ESM 4404 Fundamentals of Professional Engineering (Sp2006, Sp2007, Sp2008, Sp2009, Sp2010, Sp2011, Sp2012 - 5%)
- ESM 5405/5406 Clinical Internship in Biomedical Engineering (Sum2003, Sum2007, Sum2008, Sum2011)
- ESM 5224/BMES 5124 Advanced Musculoskeletal Biomechanics (Sp2003, Fa2004, Fa2005, Fa2006, Fa2007, Fa2008, Fa2009, Fa2010, Fa2011, Fa2012, Fa2013)
- ESM 4224 Biodynamics and Controls (Sp2008, Sp2009, Sp2010, Sp2011, Sp2014)
- ESM 5984/BMES 5984 SS: Advanced Biodynamics and Control (Sp2010, Sp2011)
- BMEN 489 Biomechanics of Human Movement (Fa2014, Fa2015, Fa2016)
- BMEN 361 Biosolid Mechanics (Sp2015, Sp2016, Sp2017)
- BMEN 457 Orthopedic Biomechanics (Sp2015, Sp2016)
- ISE 5614/BMES 5214 Human Physical Capabilities (Fa2017)
- ISE 6624 Advanced Topics in Human Factors (Sp2018)
- ISE 3624 Industrial Ergonomics (Fa2018, Fa2019)
- ISE 4624 Work Physiology (Sp2019, Sp2020)

ADVISING EXPERIENCE

- 9 PhD students graduated (department, year, current position):

Bradley Davidson, VT BME 2007 –	Associate Professor, University of Denver
Gregory Slota, VT BME 2008 –	Research Associate at Shriner's Hospital, Houston TX
Kathleen Bieryla, VT ME 2009 –	Assistant Professor, University of Portland
Dennis Anderson, VT ESM 2010 –	Assistant Professor of Orthopedic Surgery, Harvard Medical School, Department of Orthopedic Surgery, Beth Israel Deaconess Medical Center
Sara Arena, VT BME 2011 –	Collegiate Assistant Professor, Virginia Tech
Emily Miller, VT BME 2012 –	Nike Sport Research Lab Biomechanist, Beaverton, OR
Xuefang Wu, VT ISE 2015 –	Device Development Engineer, Regeneron Pharmaceuticals, Rensslaer, NY
Christina Garman, VT ESM 2015 –	Exponent, Inc.
Hoda Koushyar, VT ESM 2016 –	Instructor, Tufts University
Leigh Allin, VT BME 2019 –	Exponent, Inc.

- 18 MS students graduated (department, year):
  Emily Lloyd, ME 2003
  Bradley Davidson, ESM 2005
  Kevin Pline, ME 2005
  Erin Wilson, BME 2005
  Christine Herrmann, ME 2005
  Kathleen Bieryla, ME 2006
  HyunWook Lee, BME 2007 (co-advisor)
  Steve Hanson, ESM 2007
  Michael Whitley, BME 2008
  Sara Matrangola, BME 2008
  Emily Miller, BME 2008
  Kellen Shain, BME 2010
  Kerry Costello, BME 2011
  Danielle Beringer, BME 2013
  John Scanlon, BME 2014
  Leigh Allin, ESM 2014
  Achu Byju, TAMU, BME 2016
  Jessica Aviles, TAMU, BME 2017
  Youngjae Lee (co-advised with Divya Srinivasan), ISE 2019
- 1 Post-doctoral researcher
  Sara Matrangola – currently College Assistant Professor at Virginia Tech
- 1 PhD student in progress
  Jessica Aviles, BME 2021
- 2 MS students in progress
  Lauren Callahan
  Laith Abuhaija
- 21 senior design projects completed
- 1 senior design projects in progress in 2019-2020

RESEARCH

Past and current funding total of $8.9 million, with a personal share of $2.5 million

<u>Externally Funded Research – Completed</u>

1. Effects of low back fatigue on balance — 01/03 – 12/05
   Jeffress Foundation — $42,000
   PI: M. Madigan — Responsibility=100%,

2. Preventing falls in the elderly: identifying high-risk fallers and exercise training for improved balance recovery — 07/05 – 06/06
   Carilion Biomedical Institute — $20,000
   PI: M. Madigan, Co-PI: M.E. Williams (UVA) — Responsibility=100%

3. Risk factors and controls for falls from heights — 08/03 – 07/07
   R01 OH007882 — $921,052
   National Institute for Occupational Safety and Health — Responsibility=40%
   PI: M. Nussbaum (ISE), Co-PI: M. Madigan

4. Muscle strength and age effects in balance recovery — 08/04 – 07/07

R03 OH007821 $139,844
National Institute for Occupational Safety and Health Responsibility=80%
PI: M. Madigan, Co-PI: M. Nussbaum

5. Center for Innovation in Construction Safety and Health 08/04 – 08/09
U54 OH008308 $3,447,166
National Institute for Occupational Safety and Health Responsibility=3.26%
PI: M. Nussbaum, Co-PI: M. Madigan et al.

6. Effect of obesity on trip recovery 08/06 – 07/07
Claude D. Pepper Center of Wake Forest $45,300
PI: M. Madigan, Co-PI: K. Davy (HNFE) Responsibility=90%

7. Muscle biomechanics for automobile safety 04/08 – 03/09
Toyota Central Research and Development Labs, Inc. $310,000
PI: S. Duma (SBES), Co-PI: M. Madigan Responsibility=40%

8. Workplace factors and gender in dynamic spinal stability 03/07 – 02/12
R01 AR46111 $741,684
National Institutes of Health Responsibility=60%
PI: M. Madigan, Co-PI: M. Nussbaum
Originally awarded to K.P. Granata (deceased)

9. Occupational trunk flexion and neuromuscular disturb. 08/06 – 07/12
R01 OH008504 $1,301,831
National Institute for Occupational Safety and Health Responsibility=40%
PI: M. Nussbaum, Co-PI: M. Madigan
Originally awarded to K.P. Granata (deceased)

10. Subcontract for “Integrated sensors for balance 12/12 – 10/13
augmentation” $7,162
DoD Responsibility=100%
PI: M. Madigan

11. Effects of obesity and age on fall risk 09/11 – 08/15
R01 OH009880 $773,749
National Institute for Occupational Safety and Health Responsibility=60%
PI: M. Madigan, Co-PI: M. Nussbaum

12. Effects of pesticide exposure on postural control 03/13 – 02/16
Supplement for “CBPR on pesticide exposure and $246,164
neurological outcomes for Latinos: PACE 4” Responsibility=20%
(PI: Thomas Arcury)
3R01 ES098739-16S1
PI: M. Nussbaum, Co-PI: M. Madigan

13. Obesity, Stress, and Neuromuscular Function in the Elderly 9/15 – 8/18
R15 AG047553 $416,327

National Institutes of Health – NIA — Responsibility=1%
PI: R. Mehta (TAMSPH), Co-I: M. Madigan et al.

14. Balance Recovery Training for Fall Prevention in Retirement Communities — 09/14 – 05/16
    $413,656
    1R21AG045723-01A1 — Responsibility=55%
    National Institutes of Health - NIA
    PI: M. Madigan, Co-I: M. Nussbaum

Externally Funded Research – Active

1. Evaluating the effects of occupationally-relevant fatiguing work on trip-induced fall risk. — 01/18 – 06/20
   $13,000
   NIOSH Pilot Proposal — Responsibility=100%
   Johns Hopkins Education and Research Center for Occupational Safety and Health
   PI: M Madigan (100%), Co-I: Leigh Allin

2. Smart Prosthetic Sockets: Improved Prosthesis Comfort and Performance Through Adaptive Fluidic Flexible Matrix Composite Technology — 6/2019 – 5/2022
   $401,675
   Responsibility= 50%
   National Science Foundation
   PI: M. Philen (50%), Co-PI: M. Madigan (50%)

Internally Funded Research - Completed

1. Motion analysis for musculoskeletal injury research — 01/03 – 12/03
   ASPIRES — $20,000
   PI: M. Madigan, Co-PI: K. Granata — Responsibility=100%

2. Preventing trips with trip recovery training — 02/05 – 06/05
   VT Center for Gerontology — $4,424
   PI: M. Madigan — Responsibility=100%

3. Safety and health in occupations center data — 10/07 – 10/08
   ICTAS — $100,100
   PI: B. Kleiner, Co-PI: M. Madigan — Responsibility=23%

4. Effects of obesity on risk of slipping and tripping — 05/10 – 07/10
   Center for Innovation Construction Safety and Health Res. — $3,800
   PI: M. Madigan — Responsibility=100%

5. Comparison of gait kinematics between the research laboratory and outdoors — 05/13 – 08/13
   $8,600
   VT-OSHRC Kevin P. Granata Pilot Research Program — Responsibility=100%
   PI: M. Madigan

6. Can training methods from the performing arts be used to prevent falls and fall-related injuries?

Major Science, Engineering, Art, and Design Grants 07/2018 – 06/2019 $10,000
Virginia Tech Institute for Creativity, Arts, and Technology
PI: M Madigan (30%), Co-I: D Srinivasan (30%), C Reynolds (30%), M Nussbaum (10%)

7. Innovative Strategies for Fall Prevention using Osteopathic Evaluation and Balance Training
Research Eureka Accelerator Program 07/2018 – 06-2019 $102,898
Edward Via College of Osteopathic Medicine/Virginia Tech ICTAS
PI: P Brolinson (VCOM), M Madigan (70%), M Nussbaum (20%), K Roberto (10%), S Kim (0%), L Allin (0%), D Woodson (VCOM)
Note: $49,358 of this is from VCOM and is considered external funding, while $53,540 of this is from ICTAS and is considered internal funding.

Internally Funded Research - Active

1. Evaluation of Back Support Exoskeletons for Construction Work
8/15/19 – 8/14/20 $40,000
VT - Construction and Infrastructure Research Affiliates Program (CIRAP)
PI: Abiola Akanmu (MLSoC) and Co-PI: Michael Madigan (ISE)

SCHOLARSHIP

Total citations = 3151 via Google Scholar
h-index = 30 via Google Scholar (statistics updated Jan 2020)

PEER-REVIEWED MANUSCRIPTS * indicates with student

(82)* Aviles J, Porter GC, Estabrooks PA, Alexander NB, Madigan ML. Potential implementation of reactive balance training within continuing care retirement communities. (accepted by *Translational Journal of the American College of Sports Medicine* on 9-23-19)

(81)* Koushyar H, Anderson DE, Nussbaum MA, Madigan ML. Relative effort while walking is higher among women who are obese, and older women. *Medicine and Science in Sports and Exercise* (2019) 52(1):105-111.

(80)* Aviles J, Allin LJ, Van Mullekom J, Nussbaum MA, Alexander NB, Madigan ML. Comparison of treadmill trip-like training versus Tai Chi to improve reactive balance among older adult residents of senior housing: a pilot controlled trial. *Journals of Gerontology: Medical Sciences* (2019) 74(9):1497-1503.

(79)* Koushyar H, Bieryla, KA, Nussbaum MA, Madigan ML. Age-related strength loss affects non-stepping balance recovery. PLoS ONE 14(1): e0210049.

(78)* Allin LJ, Nussbaum MA, Madigan ML. Two novel slip training methods improve the likelihood of recovering balance and avoiding a fall after a laboratory-induced slip. *Journal of Applied Biomechanics* (2019) 35(1): 37-43.

(77)* Madigan ML, Aviles J, Allin LJ, Nussbaum MA. Alexander NB. A reactive balance rating method that correlates with kinematics after trip-like perturbations on a treadmill and fall risk among residents of older adult congregate housing. *Journals of Gerontology: Medical Sciences* (2018) 73(9):1222-1228.

(76)* Allin, LJ, Nussbaum MA, Madigan ML. Feet kinematics upon slipping discriminate between recoveries and three types of slip-induced falls. *Ergonomics*, 2018, 61(6): 866-876. http://dx.doi.org/10.1080/00140139.2017.1413212

(75)* Webster CA, Nussbaum MA and Madigan ML. Stiffness and proprioceptive contributions of ankle braces and the influence of localized muscle fatigue. *Journal of Electromyography and Kinesiology* (2017) 34:37-43.

(74)* Arena SL, Garman CR, Nussbaum MA, Madigan ML. Required friction during overground walking is lower among obese versus non-obese older men, but does not differ with obesity among women. *Applied Ergonomics* (2017) 62:77-82.

(73)* Koushyar H, Nussbaum MA, Davy KP, Madigan ML. Relative Strength at the Hip, Knee, and Ankle is Lower among Younger and Older Females Who Are Obese. *Journal of Geriatric Physical Therapy* (2017) 40:143-149.

(72)* Byju AG, Nussbaum MA, Madigan ML. Alternative measures of toe trajectory more accurately predict the probability of tripping than minimum toe clearance. *Journal of Biomechanics* (2016) 49(16):4016-4021.

(71)* Arena SL, Davis JL, Grant JW, Madigan ML. Tripping while walking elicits earlier and larger deviations in head acceleration compared to slipping *PLOS ONE* (2016) DOI:10.1371/journal.pone.0165670

(70)* Garman CR, Nussbaum MA, Franck CT, Madigan ML. A pilot study exploring obesity-related differences in fall rate and kinematic response resulting from a laboratory-induced trip. *IIE Transactions on Occupational Ergonomics and Human Factors* (2016) 4(4): 211-221.

(69)* Wu X, Nussbaum MA, Madigan ML. Executive Function and Measures of Fall Risk among People with Obesity. *Journal of Perceptual and Motor Skills* 2016, Vol. 122(3): 825–839.

(68)* Allin LJ, Wu X, Nussbaum MA, Madigan ML. Falls resulting from a laboratory-induced slip occur at a higher rate among individuals who are obese. *Journal of Biomechanics* (2016) 49: 678-683.

(67)* Garman C, Franck CH, Nussbaum MA, Madigan ML. A bootstrapping method to assess the influence of age, obesity, gender, and gait speed on probability of tripping as a function of obstacle height. *Journal of Biomechanics* (2015) 48(6): 1229–1232.

(66)* Kemper AR, Beeman SM, Madigan ML, Duma SM. Human Occupants in Low-Speed Frontal Sled Tests: Effects of Pre-Impact Bracing on Chest Compression, Reaction Forces, and Subject Acceleration. *Traffic Injury Prevention* (2014) 15:Sup1, S141-150.

(65)* Wu X, Madigan ML. Impaired Plantar Sensitivity among the Obese is Associated with Increased Postural Sway *Neuroscience Letters*, 2014, 583, 49-54.

(64) Madigan ML, Rosenblatt NJ, Grabiner MD. Obesity as a Factor Contributing to Falls by Older Adults. *Current Obesity Reports*, 2014, 3, 348-354.

(63)* Beringer DN, Nussbaum MA, Madigan ML. Temporal changes in the required shoe-floor friction when walking following an induced slip. *PLoS ONE,* 2014, 9(5), e96525.

(62)* Anderson DE, Franck C, Madigan ML. Age differences in the required coefficient of friction during level walking do not exist when experimentally-controlling speed and step length. *Journal of Applied Biomechanics,* 2014, 30, 542–546.

(61) Pamukoff DN, Haakonssen EC, Zaccaria JA, Madigan ML, Miller ME, Marsh AP. The effects of strength and power training on single-step balance recovery in older adults: a preliminary study. *Clinical Interventions in Aging,* 2014, 9, 697–704.

(60)* Anderson DE, Madigan ML. Healthy older adults have insufficient hip range of motion and plantar flexor strength to walk like healthy young adults. *Journal of Biomechanics,* 2014, 47(5), 1104-1109.

(59) Easterling DR, Watson LT, Madigan ML, Castle BS, Trosset MW. Parallel deterministic and stochastic global minimization of functions with very many minima. *Computational Optimization and Applications,* 2014, 57, 469-492.

(58)* Hendershot BD, Toosizadeh N, Muslim K, Madigan ML, Nussbaum MA. Evidence for an exposure-response relationship between trunk flexion and impairments in trunk postural control. *Journal of Biomechanics,* 2013, 46(14), 2554-2557.

(57)* Toosizadeh N, Bazrgari B, Hendershot B, Muslim K, Nussbaum MA, Madigan ML. Disturbance and recovery of trunk mechanical and neuromuscular behaviors following repetitive lifting: Influences of flexion angle and lift rate on creep-induced effects. *Ergonomics,* 2013, 56(6), 954-963.

(56)* Beeman SM, Kemper AR, Madigan ML, Duma SM. Kinetic and kinematic responses of post mortem human surrogates and the hybrid III ATD in high-speed frontal sled tests. *Accident Analysis & Prevention*, 2013, 55, 34-47.

(55)* Muslim K, Bazrgari B, Hendershot B, Toosizadeh N, Nussbaum MA, Madigan ML. Disturbance and recovery of trunk mechanical and neuromuscular behaviors following repeated static flexion: Influences of duration and duty cycle on creep-induced effects. *Applied Ergonomics,* 2013, 44(4), 643-651.

(54)* Miller EM, Bazrgari B, Nussbaum MA, Madigan ML. Effects of exercise-induced low back pain on intrinsic trunk stiffness and paraspinal muscle reflexes. *Journal of Biomechanics,* 2013, 46, 801-805.

(53)* Toosizadeh N, Nussbaum MA, Bazrgari B, Madigan ML. Load-relaxation properties of the human trunk in response to prolonged flexion: measuring and modeling the effect of flexion angle. *PLoS ONE*, 2012, 7(11), e48625. doi:10.1371/journal.pone.0048625

(52)* Anderson DE, Madigan ML. Effects of age-related differences in femoral loading and bone mineral density on strains in the proximal femur during controlled walking. *Journal of Applied Biomechanics,* 2013, 29, 505-516.

(51)* Hendershot BD, Bazrgari B, Nussbaum MA, Madigan ML. Within- and between-day reliability of trunk mechanical behaviors estimated using position-controlled perturbations. *Journal of Biomechanics*, 2012, 45(11), 2019-2022.

(50)* Miller EM, Bazrgari B, Nussbaum MA, Madigan ML. Effects of gender, preload, and trunk angle on intrinsic trunk stiffness. *Journal of Musculoskeletal Research,* 2012, 15(2).

(49)* Costello KE, Matrangola SL, Madigan ML. Independent effects of adding weight and inertia on postural sway during quiet standing. *BioMedical Engineering OnLine* 2012, 11:20.

(48)* Beeman SM, Kemper AR, Madigan ML, Franck CT, Loftus SC. Occupant kinematics in low-speed frontal sled tests: human volunteers, hybrid III ATD, and PMHS. *Accident Analysis & Prevention,* 2012, 47, 128-139.

(47)* Lin, D, Nussbaum, MA, Madigan, ML Efficacy of three interventions at mitigating the adverse effects of muscle fatigue on postural control. *Ergonomics*, 2012, 55(1), 103-113.

(46)* Singh N, Taylor WR, Madigan ML, Nussbaum MA. The spectral content of postural sway during quiet stance: influences of age, vision and somatosensory inputs. *Journal of Electromyography and Kinesiology,* 2012, 22, 131-136.

(45)* Bazrgari B, Hendershot B, Muslim K, Toosizadeh N, Nussbaum MA, Madigan ML. Disturbance and recovery of trunk mechanical and neuromuscular behaviours following prolonged trunk flexion: influences of duration and external load on creep-induced effects. *Ergonomics,* 2011, 54(11), 1043-1052.

(44)* Beeman SM, Kemper AR, Madigan ML, Duma SM. Effects of bracing on human kinematics in low-speed frontal sled tests. *Annals of Biomedical Engineering*, 2011, 39(12), 2998-3010.

(43)* Miller E, Matrangola SL, Madigan ML. Effects of obesity on balance recovery from small postural perturbations. *Ergonomics*, 2011, 54(6), 547-554.

(42) Bazrgari B, Nussbaum MA, Madigan ML. Estimation of trunk mechanical properties using system identification: effects of experimental setup and modeling assumptions. *Computer Methods in Biomechanics and Biomedical Engineering*, 2012, 15(9), 1001-1009.

(41)* Bieryla KB, Madigan ML. Proof of concept for perturbation-based balance training among older adults at a high risk of falls. *Archives of Physical Medicine and Rehab*, 2011, 92(5), 841-843.

(40)* Matrangola SL, Madigan ML. The effects of obesity on balance recovery using an ankle strategy. *Human Movement Science,* 2011, 30, 584-595.

(39)* Davidson BS, Madigan ML, Southward SC, Nussbaum MA. Neural control of posture during small magnitude perturbations: The effects of aging and localized muscle fatigue *IEEE Transactions on Bio-Medical Engineering,* 2011, 58(6), 1546-1554.

(38)* Hendershot B, Bazrgari B, Muslim K, Toosizadeh N, Nussbaum MA, Madigan ML. Disturbance and recovery of intrinsic stiffness and reflexive muscle responses following prolonged trunk flexion: influences of flexion angle and duration. *Clinical Biomechanics,* 2011, 26(3), 250-256.

(37)* Bazrgari B, Nussbaum MA, Madigan ML, Shirazi-Adl A. Soft tissue wobbling affects trunk dynamic response to sudden anterior perturbations. *Journal of Biomechanics,* 2011, 44(3), 547-551.

(36)* Wojcik LA, Nussbaum MA, Lin D, Shibata PA and Madigan ML. Age and gender moderate the effects of localized muscle fatigue on lower extremity joint torques used during quiet stance. *Human Movement Science,* 2011, 30(3), 574-583.

(35)* Shain KS, Madigan ML, Rowson S, Bisplinghoff J, Duma S. Analysis of the ability of catcher's masks to attenuate head accelerations upon impact with a baseball. *Clinical Journal of Sport Medicine,* 2010, 20(6), 422-427.

(34)* Miller E, Slota GP, Agnew MJ, Madigan ML. Females exhibit shorter paraspinal reflex latencies than males in response to sudden trunk flexion perturbations. *Clinical Biomechanics,* 2010, 25(6), 541-545.

(33)* Anderson DE, Madigan ML, Nussbaum MA. A new method for gravity correction of dynamometer data and determining passive elastic moments at the joint. *Journal of Biomechanics,* 2010, 43(6), 1220-1223.

(32)* Qu X, Nussbaum MA, Madigan ML. Model-based assessments of the effects of age and ankle fatigue on the control of upright posture in humans. *Gait & Posture,* 2009, 30, 518-522.

(31)* Singh NB, Nussbaum MA, Madigan ML. Evaluation of circumferential pressure as an intervention to mitigate postural instability induced by localized muscle fatigue at the ankle. *International Journal of Industrial Engineering,* 2009, 39, 821-827.

(30)* Matrangola SL, Madigan ML. The relative effects of weight loss and strength training on balance recovery. *Medicine and Science in Sports and Exercise,* 2009, 41(7), 1488-1493.

(29)* Lin D, Nussbaum MA, Seol H, Singh NB, Madigan ML, Wojcik LA. Acute effects of localized muscle fatigue on postural control and patterns of recovery during upright stance: influence of fatigue location and age. *European Journal of Applied Physiology,* 2009, 106(3), 425-434.

(28)* Davidson BS, Madigan ML, Nussbaum MA, Wojcik LA. Effects of localized muscle fatigue on recovery from a postural perturbation without stepping. *Gait & Posture,* 2009, 29, 552-557.

(27)* Anderson DA, Madigan ML, Nussbaum MA. An algorithm for directly fitting a moment-angle-angular velocity model to maximum voluntary muscular moment measured with an isokinetic dynamometer. *Isokinetics and Exercise Science,* 2009, 17, 51-56.

(26)* Bieryla KA, Anderson DA, Madigan ML. Estimations of relative effort during sit-to-stand increase when accounting for variations in maximum voluntary torque with joint angle and angular velocity. *Journal of Electromyography and Kinesiology,* 2009, 19, 139-144.

(25)* Matrangola SM, Madigan ML, Nussbaum MA, Ross R, Davy KD. Changes in body segment inertial parameters of obese with weight loss. *Journal of Biomechanics,* 2008, 41, 3278-3281.

(24)* Lee H, Granata KP, Madigan ML. Effects of trunk exertion force and direction on postural control of the trunk during unstable sitting. *Clinical Biomechanics,* 2008, 23(5), 505-509.

(23)* Franklin TC, Granata KP, Hendricks SL, Madigan ML. Linear time delay methods and stability analyses of the human spine: effects of neuromuscular reflex response. *IEEE Transactions on Neural Systems and Rehabilitation Engineering,* 2008 Aug, 16(4), 353-359.

(22)* Lin D, Seol H, Nussbaum M, Madigan ML. Reliability of COP-based postural sway measures and age-related differences. *Gait & Posture,* 2008, 28, 337-342.

(21)* Slota GP, Granata KP, Madigan ML. Effects of seated whole-body vibration on postural control of the trunk during unstable seated balance. *Clinical Biomechanics,* 2008, 23(4), 381-386.

(20)* Kim S, Nussbaum MA, Madigan ML. Direct parameterization of postural stability during quiet upright stance: Effects of age and altered sensory conditions. *Journal of Biomechanics,* 2008, 41(2), 406-411.

(19)* Qu X, Nussbaum MA, Madigan ML. A balance control model of quiet upright stance based on an optimal control strategy. *Journal of Biomechanics,* 2007, 40(16), 3590-3597.

(18)* Anderson DE, Madigan ML, Nussbaum MA. Maximum voluntary joint torque as a function of joint angle and angular velocity: model development and application to the lower limb *Journal of Biomechanics,* 2007, 40, 3105-3113.

(17)* Bieryla KA, Madigan ML, Nussbaum MA. Practicing recovery from a simulated trip improves recovery kinematics after an actual trip. *Gait & Posture,* 2007, 26(2), 208-213.

(16)* Wilson EL, Madigan ML. Effects of fatigue and gender on peroneal reflexes elicited by sudden ankle inversion *Journal of Electromyography and Kinesiology,* 2007, 17, 160-6.

(15)* Pline KP, Madigan ML, Nussbaum MA. Influence of fatigue time and level on increases in postural sway. *Ergonomics,* 2006, 49(15), 1639-1648.

(14)* Madigan ML, Davidson BS, Nussbaum MA. Postural sway and joint kinematics during quiet standing are affected by lumbar extensor fatigue. *Human Movement Science,* 2006, 25, 788-799.

(13) Madigan ML. Age-related differences in muscle power during single step balance recovery. *Journal of Applied Biomechanics,* 2006, 22, 185-192.

(12)* Herrmann C, Madigan M, Davidson B, Granata K. Effect of lumbar extensor fatigue on paraspinal reflexes. *Journal of Electromyography and Kinesiology,* 2006, 16, 637-641.

(11)* Wilson EL, Madigan ML, Davidson BS, Nussbaum MA. Postural strategy changes with fatigue of the lumbar extensor muscles. *Gait & Posture,* 2006, 23, 348-354.

(10)* Pline KM, Madigan ML, Nussbaum MA, Grange RW. Lumbar extensor fatigue and circumferential ankle pressure impair ankle joint motion sense. *Neuroscience Letters,* 2005, 390(1), 9-14.

(9) * Madigan ML, Lloyd EM. Age-related differences in joint torques during the support phase of single step recovery from a forward fall, *Journal of Gerontology: Medical Sciences,* 2005, 60, 910-914.

(8) * Madigan ML, Lloyd EM. Age and stepping limb performance differences during a single step recovery from a forward fall. *Journal of Gerontology: Medical Sciences,* 2005, 60, 481-485.

(7) * Davidson B, Madigan ML, Nussbaum MA. Effects of lumbar extensor fatigue and fatigue rate on postural sway. *European Journal of Applied Physiology* 2004, 93, 183-189.

(6) Madigan ML, Pidcoe PE. Changes in landing biomechanics during a fatiguing landing activity. *Journal of Electromyography and Kinesiology,* 2003, 13, 491-498.

(5) Arena R, Humphrey R, Peberdy M, Madigan M. Predicting peak oxygen consumption during a conservative ramping protocol: implications for the heart failure population. *Journal of Cardiopulmonary Rehabilitation*, 2003, 23, 183-189.

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(39)* Allin LJ, Wu X, Nussbaum MA, Madigan ML. Effects of obesity on slips and falls among young adults. *2014 Midwest Regional Meeting of the American Society of Biomechanics,* Akron, OH, March 4 -5, 2014.

(38)* Zadnik AM, Arena SL, Scanlon JM, Nussbaum MA, Madigan ML. Preliminary findings on increased slip propensity among young obese males during occupationally-relevant conditions. *2014 Midwest Regional Meeting of the American Society of Biomechanics,* Akron, OH, March 4 -5, 2014.

(37)* Koushyar H, Nussbaum MA, Madigan ML. Age and obesity-related differences in isokinetic strength of the lower extremity. *2014 Midwest Regional Meeting of the American Society of Biomechanics,* Akron, OH, March 4-5, 2014.

(36)* Garman CR, Nussbaum MA, Madigan ML. Obesity affects the margin of stability during a trip perturbation: a preliminary investigation. *2014 Midwest Regional Meeting of the American Society of Biomechanics,* Akron, OH, March 4-5, 2014.

(35)* Wu X, Nussbaum MA, Madigan ML. Effects of obesity on plantar sensitivity. *2014 Midwest Regional Meeting of the American Society of Biomechanics,* Akron, OH, March 4-5, 2014.

(34)* Scanlon JM, Nussbaum MA, Madigan ML. Comparing gait between inside and outside a laboratory setting. *2014 Midwest Regional Meeting of the American Society of Biomechanics,* Akron, OH, March 4-5, 2014.

(33)* Koushyar H, Matrangola SL, Nussbaum MA, Madigan ML. Obesity decreases lower extremity relative strength among young females. *First Biennial Conference "How can translational research solve the obesity epidemic",* Blacksburg, VA, June 17-18, 2013.

(32)* Rossi CM, Matrangola SL, Nussbaum MA, Madigan ML. Obesity does not increase probability of tripping during level walking. *First Biennial Conference "How can translational research solve the obesity epidemic",* Blacksburg, VA, June 17-18, 2013.

(31)* Beringer DN, Madigan ML, Matrangola SL. Determining the effective time period of slip-induced gait adaptations. *12th Annual Graduate Student Research Symposium of the VIRGINIA TECH - WAKE FOREST School of Biomedical Engineering and Sciences,* Blacksburg, VA, May 16, 2013.

(30)* Beyer JA, Madigan ML, Goforth MW, Rowson S, Duma SM. The Etiology of impact related concussions for catchers and umpires in baseball. *10th Annual Graduate Student Research Symposium of the VIRGINIA TECH - WAKE FOREST School of Biomedical Engineering and Sciences,* Blacksburg, VA, May 12, 2011.

(29)* Beeman SM, Kemper AR, Madigan ML, Duma SM. Effects of muscle activation of volunteer kinematics in frontal sled tests. *10th Annual Graduate Student Research Symposium of the VIRGINIA TECH - WAKE FOREST School of Biomedical Engineering and Sciences,* Blacksburg, VA, May 12, 2011.

(28)* Costello KE, Matrangola SL, Madigan ML. The independent effects of inertia and weight on balance. *2011 VIRGINIA TECH - WAKE FOREST School of Biomedical Engineering and Sciences Student Research Symposium,* Blacksburg, VA, May 5, 2011.

(27) Matrangola SL, Madigan ML. Single step balance recovery from a forward fall in healthy-weight and obese young adults. *2011 VIRGINIA TECH - WAKE FOREST School of Biomedical Engineering and Sciences Student Research Symposium,* Blacksburg, VA, May 5, 2011.

(26)* Miller EM, Bazrgari B, Nussbaum MA, Madigan ML. Effects of exercise-induced low back pain on intrinsic trunk stiffness in response to sudden flexion position perturbations. *2011 VIRGINIA TECH - WAKE FOREST School of Biomedical Engineering and Sciences Student Research Symposium,* Blacksburg, VA, May 5, 2011.

(25)* Costello KE, Matrangola SL, Madigan, ML. The effect of increased inertia on balance using an ankle strategy. *9th Annual Graduate Student Research Symposium, VT – Wake Forest University School of Biomedical Engineering and Sciences*, May 13, 2010.

(24)* Matrangola SL, Madigan ML. The effect of obesity on balance recovery using an ankle strategy is dependent on perturbation type. *9th Annual Graduate Student Research Symposium, VT – WFU School of Biomedical Engineering and Sciences*, May 13, 2010.

(23)* Miller EM, Bazrgar B, Hendershot B, Nussbaum M, Madigan ML. Dynamic response of the trunk to position perturbations. *9th Annual Graduate Student Research Symposium, VT – Wake Forest University School of Biomedical Engineering and Sciences*, May 13, 2010.

(22)* Shain KS, Madigan ML, Rowson S, Bisplinghoff J, Duma SM. Analysis of catcher's mask performance. *9th Annual Graduate Student Research Symposium, VT – Wake Forest University School of Biomedical Engineering and Sciences*, May 13, 2010.

(21)* Miller EM, Madigan ML, Slota GP. Gender differences in paraspinal reflex latencies. *8th Annual Graduate Student Research Symposium of the VT – Wake Forest University School of Biomedical Engineering and Sciences*, May 14, 2009.

(20)* Matrangola SL, Madigan ML. Slip and trip propensity in overweight and normal weight adults. *8th Annual Graduate Student Research Symposium of the VT – Wake Forest University School of Biomedical Engineering and Sciences*, May 14, 2009.

(19)* Matrangola SL, Madigan ML. A preliminary modeling investigation of obesity and balance recovery from a forward lean. *ESM 100th Anniversary Conference*, Blacksburg, VA, May 29-30, 2008.

(18)* Miller EM, Madigan ML, Matrangola SL. Effects of obesity on balance recovery. *ESM 100th Anniversary Conference*, Blacksburg, VA, May 29-30, 2008.

(17)* Bieryla KA, Anderson DA, Madigan ML. Joint angle and angular velocity affect estimations of relative effort. *ESM 100th Anniversary Conference*, Blacksburg, VA, May 29-30, 2008.

(16)* Anderson DA, Madigan ML, Nussbaum MA. A new approach for determining gravitational torque for the correction of dynamometer data. *ESM 100th Anniversary Conference*, Blacksburg, VA, May 29-30, 2008.

(15)* Slota GP, Granata KP, Madigan ML. Effects of seated whole body vibration on seated postural sway. *ESM 100th Anniversary Conference*, Blacksburg, VA, May 29-30, 2008.

(14)* Slota GP, Granata KP, Madigan ML. Effects of seated whole body vibration on postural control of the trunk during unstable seated balance. *Annual Graduate Student Research Symposium of the VT – Wake Forest University School of Biomedical Engineering and Sciences*, May 8, 2008.

(13)* Matrangola SM, Madigan ML. Increased strength is more beneficial to balance recovery than weight loss in obese subjects. *Annual Graduate Student Research Symposium of the VT – Wake Forest University School of Biomedical Engineering and Sciences*, May 8, 2008.

(12)* Davidson BS, Madigan ML, Nussbaum MA. Identification and stability analysis of the postural control system during small magnitude perturbations: The effects of aging and muscle fatigue. 6th *Annual Graduate Student Research Symposium of the VT – Wake Forest University School of Biomedical Engineering and Sciences*, May 10, 2007.

(11)* Anderson DA, Madigan ML. A method for estimating maximum available joint torques during human movement. *SE Regional ASB Conference*, Duke University, April 19-21, 2007.

(10)* Bieryla KA, Anderson DA, Madigan ML. A new method of joint torque normalization during sit to stand. *SE Regional ASB Conference*, Duke University, April 19-21, 2007.

(9) * Davidson BS, Madigan ML, Nussbaum MA. Changes in balance with low back fatigue. *Virginia Academy of Science 2006 Annual Meeting*, Blacksburg, VA, May 24-26, 2006.

(8) * Bieryla KA, Madigan ML, Nussbaum MA. Trip recovery: Can we improve it through practice to prevent falls? *Virginia Academy of Science 2006 Annual Meeting*, Blacksburg, VA, May 24-26, 2006.

(7) * Bieryla KA, Madigan ML, Nussbaum ML. Repeated exposure to a simulated trip improves trip recovery performance. *5th Annual Graduate Student Research Symposium of the VT – Wake Forest University School of Biomedical Engineering and Sciences*, May 11, 2006.

(6) * Davidson BS, Madigan ML, Nussbaum ML. Localized changes in joint kinematics during quiet standing following lumbar extensor fatigue. *5th Annual Graduate Student Research Symposium of the Virginia Tech – Wake Forest University School of Biomedical Engineering and Sciences*, May 11, 2006.

(5) * Bieryla KA, Madigan ML. Improvements and retention of trip recovery due to repeated exposures of a simulated trip. *Southeast Biomechanics Conference*, Atlanta, GA, March 30 - April 1, 2006.

(4) * Davidson BS, and Madigan ML. Effects of fatigue rate on balance degradation. *3rd Annual Graduate Student Research Symposium of the Virginia Tech – Wake Forest University School of Biomedical Engineering and Sciences*, April 24, 2004.

(3) * Davidson BS, and Madigan ML. Effects of low back fatigue on balance. *2nd Annual Graduate Student Research Symposium of the Virginia Tech – Wake Forest University School of Biomedical Engineering and Sciences*, May 1, 2003.

(2) * Lloyd EM, and Madigan ML. Trip recovery using the dominant and non-dominant lower limbs. *2nd Annual Graduate Student Research Symposium of the Virginia Tech – Wake Forest University School of Biomedical Engineering and Sciences*, May 1, 2003.

(1) Madigan ML, Pidcoe PE. Changes in lower extremity performance during a dynamic high-intensity exercise. *Virginia Academy of Science 2001 Annual Meeting*, Harrisonburg, VA, May 23-25, 2001.

OTHER TALKS GIVEN

(3) Invited talk at the *Virginia Fall Prevention Coalition first annual meeting*, Blacksburg, VA, April 4, 2019.

(2) Madigan ML. Reactive balance training for fall prevention. *Virginia Tech Center for Gerontology, First Annual Five by Five by Five*. February 15, 2018.

(1) Madigan ML. Balance recovery training for fall prevention in retirement communities. *National Institutes of Health/National Institute on Aging T1 Translational Aging Research Workshop*. April 19-20, 2018.

HONORS AND AWARDS

Earned while at Virginia Tech

- Finalist for International Society of Biomechanics - Clinical Biomechanics Award, 2005
- Nominated for the ASEE Southeast Section Outstanding New Teacher Award, 2005
- Nominated for College of Engineering Sporn Award for Teaching, 2006
- Virginia Tech Center for Gerontology Faculty Affiliate Research Award, 2005
- Virginia Tech Scholar of the Week, March 27-31, 2006
- Virginia Tech College of Engineering Dean's Award for Excellence in Teaching, 2006
- Virginia Tech, Engineering Science and Mechanics Liviu Librescu Faculty Prize, 2011
- Virginia Tech College of Engineering Faculty Fellow, 2012-2014
- Virginia Tech Scholar of the Week, September 10, 2012
- Kevin P. Granata Faculty Fellow, 2013-2014
- Virginia Tech College of Engineering Certificate of Teaching Excellence 2014
- Texas A&M University, Biomedical Engineering, Faculty Commitment to Students Award, 2017

Prior to Virginia Tech

- Phi Kappa Phi (Virginia Commonwealth University), 2002

- Best Student Paper Award – Biomedical & General Engineering, Virginia Academy of Science 2001 Annual Meeting
- International Society of Biomechanics Dissertation Grant, 2001
- Texas Engineering Experiment Station Research Fellowship, 1994-1995
- Biography published in Nation Dean's List, 1994
- Texas Engineering Experiment Station Undergraduate Summer Research Grant, 1994
- Distinguished Student Award for College of Engineering, 1994

Awards received by students that I advised

- Sara Matrangola was awarded a 3-year National Defense Science and Engineering Graduate Fellowship sponsored by the Department of Defense
- Dennis Anderson was awarded a 3-year National Research Service Award from the National Institute on Aging of the National Institute of Health
- Kerry Costello was awarded a 3-year VT-CoE Dean's Teaching Fellowship
- Kellen Shain was awarded a Summer Internship with Nike at headquarters in Beaverton, OR
- Kerry Costello was awarded a 1-year internship at the Steadman Philippon Research Institute in Vail, CO
- Katie Bieryla was awarded an American Association of University Women Educational Foundation Selected Professions Fellowship for the 2008-2009 academic year
- 2010-2011 Senior Design group (Danielle Beringer, Adam Golman, Tara Crozier, and Wes Buxton) awarded the ESM Dan H. Pletta Award for most outstanding senior design project. Project title was: *The Passive Material Properties of the Lower Back: Experimental Design and Model*
- Sara Matrangola was awarded second place among Ph.D. Oral Presentations at the *10th Annual Graduate Student Research Symposium of the VIRGINIA TECH - WAKE FOREST School of Biomedical Engineering and Sciences,* Blacksburg, VA, May 12, 2011
- Kerry Costello was awarded first place among M.S. Oral Presentations at the *10th Annual Graduate Student Research Symposium of the VIRGINIA TECH - WAKE FOREST School of Biomedical Engineering and Sciences*, Blacksburg, VA, May 12, 2011
- Kerry Costello was awarded an Honorable Mention for NSF Graduate Research Fellowship.
- Sara Matrangola was awarded an ASB Student Travel Award for the 2011 Annual Meeting of the American Society of Biomechanics
- Leigh Allin was awarded the Weaver-James-Corrigan Award, which is an ACC Postgraduate Scholarship to student-athletes
- Hoda Koushyar was awarded the Virginia Tech David W. Francis and Lillian Francis Scholarship
- John Scanlon was awarded second place among M.S. Oral Presentations at the *13th Annual Graduate Student Research Symposium of the VIRGINIA TECH - WAKE FOREST School of Biomedical Engineering and Sciences*, Blacksburg, VA, May 8, 2014
- John Scanlon was awarded a Virginia Tech School of Biomedical Engineering and Sciences Pratt Fellowship for the 2014-2015 academic year.
- Jessica Aviles was awarded a 3-year Bridge-to-Doctorate Fellowship from the Texas A&M Louis Stokes Alliance for Minority Participation, 2015-2017.
- Jessical Aviles was awarded an NSF Alliance for Graduate Educations and the Professoriate Scholarship, 2016.

- Jessica Aviles was awarded "Best Graduate Student Presentation" at the South Central Regional Meeting of the American Society of Biomechanics, Dallas, TX, March 31-April 1, 2017.
- Leigh Allin was awarded a TAMU-BME Graduate Student Travel Grant for attending the 2017 Annual Meeting of the American College of Sports Medicine in Denver, CO.
- Jessica Aviles was awarded second place in the poster competition at the Texas A&M University System Louis Stokes Alliance for Minority Participation Symposium, March 3, 2017.
- Jessical Aviles was awarded an NSF Alliance for Graduate Educations and the Professoriate Scholarship, 2017.
- Jessica Aviles was awarded a 2017 American Society of Biomechanics Diversity Travel Award to help support her travel to the ASB annual meeting.
- Leigh Allin was selected to attend the second annual Academic Research Colloquium at the University of Dayton from October 10-12, 2017.
- Leigh Allin awarded a NIOSH Pilot Proposal from the Johns Hopkins Education and Research Center for Occupational Safety and Health titled “Evaluating the effects of occupationally-relevant fatiguing work on trip-induced fall risk”. 01/18 – 06/18
- Jessica Aviles was awarded a 2018 American Society of Biomechanics Diversity Travel Award to help support her travel to the ASB annual meeting.
- Leigh Allin was awarded a 2018 Society of Women Engineers Baltimore-Washington Section Scholarship for $2000 (selected out of 1,8000 applications)
- Jessica Aviles was awarded a 2018 American Society of Biomechanics Student Travel Award to help support her travel to the ASB annual meeting.
- Youngjae Lee was awarded a $1,000 Chunghi Hong Park Scholarship from the Korean-American Scientists and Engineers Association
- Jessica Aviles was awarded 1st Place for Best Graduate Student Clinical Research Poster Presentation at the VCOM Research Day, Feb 22, 2019.
- Jessica Aviles was awarded the $2,500 Ellen E. Wade Graduate Studies Fellowship by the Virginia Tech Graduate School for the 2019-2020 academic year.
- Jessica Aviles was awarded a $1,000 Graduate Research Development Program Award from the Virginia Tech Graduate School for Spring 2019.

UNIVERSITY SERVICE

DEPARTMENT SERVICE

- Lab tour for ESM/COE open house/other event: October 2001; October 2002; March 2004; April 2004; October 2005; April 2007; April 2009; July 2009; October 2009; April 2010; October 2010
- Core member of the Virginia Tech – Wake Forest School of Biomedical Engineering & Sciences (2001 – present)
- Affiliate member of the Virginia Tech Center for Gerontology (2001 – present)
- Member of ESM biomechanics faculty search committee (2001 – 2002)
- ESM representative during commencement ceremonies: Spring 2002; Spring 2004; Spring 2006
- Member of the ESM undergraduate curriculum committee (2002 – present)
- Member of the ESM budget committee (2002)
- Member of the ESM space committee (2002)
- Member of ESM department head search committee (2002 – 2003)

- Repeated awards committee member and/or session moderator for The Virginia Tech Center for Biomedical Engineering and Wake Forest University School of Medicine Annual Student Research Symposium (2002 - 2005)
- Member of ad hoc committee to investigate changing textbooks for *ESM 2204 – Mechanics of Deformable Bodies* (2004)
- Represented ESM during GUEST (General Undergraduate Engineering Support Teams) reception for incoming freshman engineering students (Fall 2005)
- ESM Professional Development Seminar (October 18, 2005)
- Member of the ESM qualifying examination committee (2006 – present)
- Member of the ESM undergraduate committee (2006 – present)
- Interim head of the ESM undergraduate committee (fall 2012)
- Member of the ESM Strategic planning committee (2012 - present)
- Member of ME biomechanics faculty search committee (2006 – 2007)
- Member of the ESM undergraduate program development committee (2006 – 2008)
- Course supervisor for Mechanics of Deformable Bodies (2007 – 2010)
- Member of the Granata/Librescu seminar committee (Fall 2008 –)
- SBES qualifying exam reviewer (July 2009)
- Member of ESM search committee for instructor for service courses (2010)
- Member of ESM executive committee (2010 - 2012)
- Member of ESM Laboratory Group to update labs in undergraduate curriculum (2012)
- Interim head of ESM Undergraduate Curriculum Committee (Fall 2012)
- Member of faculty search committee for ESM (AY 2013-2014)
- Member of ESM P&T committee (3-year term starting January 1, 2014)
- Head of ESM Undergraduate Curriculum Committee (Fall 2013 –)
- Member of TAMU BMEN Facilities and Space Committee (2014 –)
- Member of TAMU BMEN Tenure and Promotion Committee (2014 –)
- Member of TAMU BMEN Department Head Search Committee (2014-2015)
- Member of TAMU BMEN Undergraduate Committee (2015 –)
- Member of TAMU BMEN Strategic Planning Committee (2015 – 2016)
- Member of TAMU BMEN Scholarship Committee (2016-)
- Chair of VT ISE Promotion and Tenure Committee (2017-)
- Member of VT ISE Strategic Planning Committee (2017-)
- Member of VT ISE Named Professorship Committee (2017-)
- Mentor to Dr. Rafael Patrick

<u>COLLEGE SERVICE</u>

- Founding and continuing member of The Virginia Tech Center for Applied Biomechanics (2005 - present)
- Judged ME student presentations for senior design projects during Spring 2002 and 2006.
- Session moderator at the *1st Annual Virginia Tech – Wake Forest University School of Biomedical Engineering and Sciences Graduate Student Research Symposium*. May 2, 2002.
- Judge for presentation awards at the *1st Annual Virginia Tech – Wake Forest University School of Biomedical Engineering and Sciences Graduate Student Research Symposium*. May 2, 2002.
- Judge for poster awards at the 2nd Annual *Virginia Tech – Wake Forest University School of Biomedical Engineering and Sciences Graduate Student Research Symposium*, May 1, 2003.

- Provided lab tour during COE open house, April 4, 2005.
- Judge for presentation and poster awards at the *4th Annual Virginia Tech – Wake Forest University School of Biomedical Engineering and Sciences Graduate Student Research Symposium*, May 12, 2005.
- Head of COE task force to review service course teaching (2010)
- Faculty advisor for Virginia Tech chapter of Engineering World Health
- Member of committee for 5-year evaluation of Dr. Stefan Duma, SBES Head
- TAMU BMEN Facilities and Space Committee, member 2014 –
- TAMU BMEN Tenure and Promotion Committee, member, 2014 -
- TAMU BMEN Department Head Search Committee, member, 2014-2015
- TAMU BMEN Undergraduate Committee, member 2015 –
- TAMU BMEN Strategic Planning Committee, member 2015 – 2016
- Spearheading efforts to revise undergraduate biomechanics track in TAMU BMEN
- TAMU College of Engineering Undergraduate Probation and Dismissal Committee, 2016
- TAMU BMEN Faculty Search Committee, 2016 – 2017
- Sub-committee of the College P&T Committee to consider appointments to new hires with tenure, or at the Associate/Full level.

PROFESSIONAL SERVICE

- Session Co-Chair at 2004 Annual Meeting of the American Society of Biomechanics, Sept 8–11, 2004, Portland OR.
- Session Co-Chair at 2005 Congress of the International Society of Biomechanics, July 31 – August 5, 2005, Cleveland, OH.
- Co-Chair of Host Committee for the 2006 Annual Meeting of the American Society of Biomechanics, Sept 6-9, 2006, Blacksburg, VA.
- Session Chair at 2009 Annual Meeting of the American Society of Biomechanics, August 26-29, 2009, State College, PA.
- Member of Awards Committee for Clinical Biomechanics Award at 2009 Annual Meeting of the American Society of Biomechanics, State College, PA.
- Program Committee for 2010 Annual Meeting of the American Society of Biomechanics, August 18-21, 2010, Providence, RI.
- Session Co-Chair at 2011 Annual Meeting of the American Society of Biomechanics, Aug 10-13, 2011, Long Beach, CA.
- Member of Post-doctoral Award Committee at the 2013 Annual Meeting of the American Society of Biomechanics, Sept 4-7, 2013, Omaha, NE.
- Program Committee for 2013 Annual Meeting of the American Society of Biomechanics, September 4-7, 2013, Omaha, NE.
- Session Co-Chair at 2013 Annual Meeting of the American Society of Biomechanics, September 4-7, 2013, Omaha, NE.
- Abstract reviewer for 2015 Summer Biomechanics, Bioengineering and Biotransport Conference (SB3C), June 17-20, 2015, Snowbird, UT.
- Session organizer at 2015 Annual Meeting of the American Society of Biomechanics, August 5-8, 2015, Columbus, OH
- Active manuscript reviewer for numerous journals:
  Journal of Biomechanics, Medicine and Science in Sports and Exercise, Journal of Applied Biomechanics, Journal of Athletic Training, Spine, Clinical Biomechanics, European Journal

of Applied Physiology, Human Movement Science, Gait and Posture, Experimental Brain Research, Journal of Electromyography and Kinesiology, Journal of Theoretical Biology, IEEE Transactions on Neural Systems and Rehabilitation Engineering, Journal of NeuroEngineering and Rehabilitation, Applied Ergonomics, Obesity, Annals of Biomedical Engineering, IIE Transactions on Occupational Ergonomics and Human Factors, Journal of Gerontology: Medical Sciences

- Proposal reviewer for 3 private funding agencies:
  Jeffress Memorial Trust, Richmond, VA
  San Antonio Life Sciences Institute, San Antonio, TX
  The 21st Century Fund, Indianapolis, IN
- Review panel member, Office of Scientific Review, Special Emphasis Panel/Scientific Review Group 2015/10 ZGM1 TWD-8 (SC), July 14, 2015.
- Secretary and Membership Chair, American Society of Biomechanics, 2009-2012
- Editorial Board, *Journal of Applied Biomechanics*, 2009-2012
- Associate Editor, *Journal of Applied Biomechanics*, September 2012-2016
- Associate Editor, *Medicine and Science in Sports and Exercise*, October 2013-2017
- Editor-in-Chief, *Journal of Applied Biomechanics*, 2017-
- Abstract reviewer for 2018 Biomedical Engineering Society Annual Conference, October 17-20, 2018, Atlanta, GA.

PROFESSIONAL AFFILIATIONS

- American Society of Biomechanics (2000)
- American Society for Engineering Education (2001)
- International Society of Biomechanics (2000)
- Gait and Clinical Movement Analysis Society (2002)
- American College of Sports Medicine (2006)
- Sigma XI (2013)
- International Society for Posture and Gait Research (2016)