Nima Toosizadeh, PhD

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Department of Rehabilitation and Movement Sciences
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CHRONOLOGY OF EDUCATION AND TRAINING

2001-2005	B.S. Mechanical Engineering, Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran
2005-2008	M.Sc. Biomedical Engineering in the field of Biomechanics, Iran University of Science and Technology (IUST), Tehran, Iran Advisor: Mohammad Haghpanahi *Thesis*: "Finite Element Modeling of the Cervical Spine: Estimating Muscle Forces and Internal Loads"
2008-2013	Ph.D. Industrial and Systems Engineering, Virginia Polytechnic Institute and State University (Virginia Tech), Blacksburg, VA, Advisor: Maury A. Nussbaum *Dissertation*: "Time-dependent Assessment of the Human Lumbar Spine in Response to Flexion Exposures: In Vivo Measurement and Modeling"
2013-2015	Biomedical Engineering Post-doctorate, interdisciplinary Consortium Advanced Motion Performance (iCAMP), University of Arizona, Tucson, AZ Supervisor: Bijan Najafi
2015-2023	Aging and Cognition Fellow, Healthy Brain Research Center, CDC

CHRONOLOGY OF EMPLOYMENT

2009-2012	Research Assistant, Human Safely & Health lab, Virginia Tech, Blacksburg, VA
2011-2013	Instructor/Teaching Assistant, Human Factor Engineering & Manufacturing Lab, Virginia Tech, Blacksburg, VA
2013-2015	Research Associate, interdisciplinary Consortium Advanced Motion Performance (iCAMP), University of Arizona, Tucson, AZ
2014-2023	Bioengineer Collaborator, Center for Healthy Aging, Banner Sun Health Research Institute
2015-2016	Research Associate, Senior: Arizona Center on Aging, University of Arizona, Tucson, AZ
2016-2017	Research Assistant Professor, Department of Biomedical Engineering, University of Arizona, Tucson, AZ
2016-2017	Research Assistant Professor, the Division of General Internal Medicine, Geriatrics, and Palliative Medicine, Department of Medicine, University of Arizona, Tucson, AZ
2017-2023	Assistant Professor, Department of Biomedical Engineering, University of Arizona, Tucson, AZ
2017-2023	Assistant Professor, the Division of General Internal Medicine, Geriatrics, and Palliative Medicine, Department of Medicine, University of Arizona, Tucson, AZ
2023-Present	Associate Professor, Department of Rehabilitation and Movement Sciences, Rutgers University, Newark, NJ

HONORS AND AWARDS

2009-2011	Outstanding Graduate Student; Industrial and Systems Engineering Department, Virginia Tech
2013	Young investigator award from The Gerontological Society of America (GSA) for "Aging, the Central Nervous System, and Mobility in Older Adults: Neural Mechanisms of Mobility Impairments."
2013	Arizona Center on Aging, Research Associate
2014	First place in the Undergraduate Health Science UA Student Showcase
2014	Most Creative Research award from BME Design Day
2018	Second Place Winner Phil Jacobs Award, Vascular Society, 39th Annual Meeting
2017	UA BIO5 Research Scholar
2018	UA Pepper Scholar
2018	Acceleration for Success (AFS) Scholar award
2019	BIO5 Institute Team Scholars Program Award
2020	Excellence at the Student Interface Award, Department of Biomedical Engineering, College of Engineering
2022	Arizona Alzheimer's Consortium (AAC) scholar award
2022	Excellence at the Student Interface Award, Most Supportive Faculty Member, Department of Biomedical Engineering, College of Engineering
2024	Excellence in Research Award, Outstanding Accomplishments in Research and Scholarship, The New Jersey Health Foundation, Rutgers University

SERVICE/OUTREACH-NATIONAL/INTERNATIONAL

2023 Reviewer Panel for NIH - Clinical Informatics and Digital Health (CIDH)
2024 Reviewer Panel for NIH - Aging Systems and Geriatrics (ASG)

2022 Associate Director for Frontiers in Sports and Active Living - Biomechanics and Control of Human Movement

Reviewer for
- Gerontology
- Sensors
- Journal of Applied Biomechanics
- IEEE Transactions on Biomedical Engineering
- European Spine Journal
- IEEE Journal of Biomedical and Health Information
- Journal of the American Podiatric Medical Association (JAPMA)
- Gait & Posture Journal
- International Journal of Chronic Obstructive Pulmonary Disease
- Scientific Reports

2023	Annual Performance Review Committee
2018-2023	Biomedical Engineering Undergraduate Affairs Committee
2017-2023	Serve as Lab Mentor for high school Keep Engaging Youth in Science (KEYS) program at UA
2016-2017	Biomedical Engineering Seminar Series Organizer and Host

Student Examination Committees (non-advisor) (2018-Present)
- Ph. D. = 2
  - Carissa Grijalva, Biomedical Engineering
  - Tucker Stuart, Biomedical Engineering
- M. S. = 2
  - Jack Vincent, Biomedical Engineering

- Tyler Donald Hertenstein, Biomedical Engineering

Ph.D. Comp Exam. = 4
- Carissa Grijalva, Biomedical Engineering
- Jiayan Huo, Electrical and Computer Engineering
- Tucker Stuart, Biomedical Engineering
- Zihang You, Biomedical Engineering (NJIT)

Ph. D. Qualifier = 0

M. S. Non-Thesis Exam Committees = 0

TEACHING

Lecturer

Intro to Biomechanics
- BME 214 (Fall 2022)
- BME 214 (Fall 2021)
- BME 214 (Fall 2020)
- BME 214 (Fall 2019)
- BME 214 (Fall 2018)
- BME 214 (Fall 2017)

Biomechanical Engr
- AME/BME 466/566 (Fall 2016)

Biomedical Engr Seminar
- BME 696A (Fall 2017)
- BME 696A (Fall 2016)

Guest Lecturer

Challenges in Biomedical Engineering
- BME 295C (Spring 2022)
- BME 295C (Spring 2021)
- BME 295C (Spring 2020)
- BME 295C (Spring 2019)
- BME 295C (Spring 2018)
- BME 295C (Spring 2017)

OTHER TEACHING

Post-doctoral Researcher (Current)

1. Mehran Asghari, Biomedical Engineering, University of Arizona

PhD Mentees (Current)

1. Kelsi Petrillo, Biomedical Engineering, University of Arizona

Post-doctoral Researcher (Former)

1. Hossein Ehsani, PhD, Biomedical Engineering, University of Arizona

PhD Mentees (Former)

2. Mehran Asghari, Biomedical Engineering, University of Arizona (graduated May 2023)
3. Patricio Arrue, Biomedical Engineering, University of Arizona (graduated May 2023)
4. Danya Pradeep Kumar, Electrical Engineering/Biomedical Engineering, University of Arizona (graduated Spring 2021)

Graduate Mentees (Current)

2. Karam Elali, Biomedical Engineering, University of Arizona
3. Martha Rocio Ruiz, Public Health, University of Arizona
4. Rylie Watson, Biomedical Engineering, University of Arizona
5. Peggy Ackun, Biomedical Engineering, University of Arizona

Graduate Mentees (Former)

1. Miguel Pena, Biomedical Engineering, University of Arizona
2. Audrey Cohen, Biomedical Engineering, University of Arizona
3. Amy Muchna, MPH, Arizona Center on Aging, College of Medicine, University of Arizona
4. Hannah Stocker, MPH student/ RA, Arizona Center on Aging, College of Medicine, University of Arizona
5. Coco Victoria G. Tirambulo, Public Health, University of Arizona

Undergraduate Mentees (Current)

1. Paige Rudy, Biomedical Engineering (UBRP), University of Arizona
2. Alex Sullivan, Biomedical Engineering (UBRP), University of Arizona
3. Hector Flores, Biomedical Engineering, University of Arizona
4. Haley Johnson, Biomedical Engineering, University of Arizona
5. Isabellah Mayoral Ortega, Biomedical Engineering, University of Arizona
6. Isabelle O'Grady, Biomedical Engineering, University of Arizona
7. Amir Sobhan Haghiri, Biomedical Engineering, University of Arizona

Undergraduate Mentees (Former)

1. Miriam Heras, Cognitive Science and Management Information Systems, University of Arizona
2. Hana Turko, Biomedical Engineering, University of Arizona
3. Mark Andrew Bosset, Biomedical Engineering, University of Arizona
4. Thomas Zachariah Murickan, Biomedical Engineering, University of Arizona
5. Emma Katelyn Mason, Biomedical Engineering, University of Arizona
6. Julia Gailene McElwee, Biomedical Engineering, University of Arizona
7. Tzu-Chuan Yen, Department of Physiology, College of Medicine, University of Arizona
8. Michelle Heusser, Department of Biomedical Engineering, College of Engineering, University of Arizona (Awards: 1st place in the Undergraduate Health Science UA Student Showcase-2014; Most Creative Research award from BME Design Day-2014)
9. Ashley Scott, COPH, Arizona Center on Aging, College of Medicine, University of Arizona
10. Marco Miramontes, Biomedical Engineering, College of Medicine, University of Arizona
11. Jaimeson Veldhuizen, Biomedical Engineering, Flinn Scholar, University of Arizona
12. Reine Mager, Biomedical Engineering, Flinn Scholar, University of Arizona
13. Brian Hedden, Biomedical Engineering, Flinn Scholar, Arizona State University
14. Suhail Hiermandi, Biomedical Engineering, Flinn Scholar, Arizona State University
15. Alexys Leigh Manring, Biomedical Engineering, University of Arizona
16. Genevieve Wahlert, Biomedical Engineering, University of Arizona
17. Ziad Hindosh, Physiology, University of Arizona
18. Faysal Stipho, Physiology, University of Arizona
19. Ghazal Moghaddami, Biomedical Engineering, University of Arizona
20. Alexandra Phillips Sween, Physiology, University of Arizona
21. Talia Sora Nagy Tax, high school Scholar
22. Ben Carpenter, Biomedical Engineering, University of Arizona
23. Kayleigh Mylelle Ruberto, Biomedical Engineering, University of Arizona
24. Audrey Cohen, Biomedical Engineering, University of Arizona

PATENT

Najafi B.(33%), Mohler J.(33%), **Toosizadeh N**.(34%), (2014) Methods and System to Identify Frailty Using Joint Movement Protocol. Patent number: 20150332004

PUBLICATIONS: REFEREED JOURNAL ARTICLES

Google Scholar Website: https://scholar.google.com/citations?user=s1rr8msAAAAJ&hl=en
PubMed Website: https://www.ncbi.nlm.nih.gov/pubmed/?term=nima+toosizadeh
* Publications substantially based on work done as a graduate student
º Publications with substantial contribution from students from Dr. Toosizadeh's lab

1. ºArrué P., Laksari K., Russo M., La Placa T., Smith M., **Toosizadeh N**., (2024) Associating Frailty and Dynamic Dysregulation between Motor and Cardiac Autonomic Systems, Frontiers in Aging, In Press.
2. ºAsghari M., Elali K., Sullivan A., LaFleur B., Madigan ML., **Toosizadeh N.**, (2024) Assessing the role of ankle and hip joint proprioceptive information in balance recovery using vibratory stimulation, Heliyon, In Press.
3. Hu S., Cao S., **Toosizadeh N.**, Barton J., Hector M., Fain M., (2023) mmPose-FK: A Forward Kinematics Approach to Dynamic Skeletal Pose Estimation Using mmWave Radars, IEEE Sensors Journal, In Press.
4. Hu S., Cao S., **Toosizadeh N.**, Barton J., Hector M., Fain M., Poston P.E., (2023) A Survey on Radar-Based Fall Detection, IEEE Robotics and Automation Magazine, In Press.
5. Grijalva C., Hale D., Wu L., **Toosizadeh N**., Laksari K., (2023) Hyper-acute effects of sub-concussive soccer headers on brain function and hemodynamics, Frontiers in Human Neuroscience, In Press.
6. ºPetrillo K., Javeh B., **Toosizadeh N**., (2023) Association between Dual-Task Function and Neuropsychological Testing in Older Adults with Cognitive Impairment, Experimental Gerontology, 178, 112223.
7. ºKumar D.P., Najafi B., Laksari K., **Toosizadeh N.**, (2023) Sensor-based Assessment of Variability in Daily Physical Activity and Frailty, Gerontology, 1-1.
8. ºAsghari M., ºPeña M., ºRuiz M., ºJohnson H., Ehsani H., **Toosizadeh N**., (2023) A computational musculoskeletal arm model for assessing muscle dysfunction in chronic obstructive pulmonary disease, Medical & Biological Engineering & Computing, 1-14.
9. ºPeña M., ºPetrillo K., ºBosset M., Fain M., Chou YH., Rapcsak S., **Toosizadeh N.**, (2022) Brain function complexity during dual-tasking is associated with cognitive impairment and age, Journal of Neuroimaging, 32 (6), 1211-1223.
10. Deshpande A., Elliott j., Kari N., Jiang B., Michel P., **Toosizadeh N.**, Fahadan PT., Kidwell C., Wintermark M., Laksari K., (2022) Novel imaging markers for altered cerebrovascular morphology in aging, stroke, and Alzheimer's disease, Journal of Neuroimaging, 32 (5), 956-967.
11. **Toosizadeh N.**, ºEskandari M., ºEhsani H., Parvaneh S., ºAsghari M., Sweitzer N., (2022) Frailty Assessment Using a Novel Approach Based on Combined Motor and Cardiac Functions: A Pilot Study, BMC Geriatrics, 22 (1), 1-10.
12. ºEskandari-Nojehdehi M., Parvaneh S., ºEhsani H., Fain M., **Toosizadeh N.**, (2022) Frailty Identification using Heart Rate Dynamics: A Deep Learning Approach, IEEE Journal of Biomedical and Health Informatics, 26 (7), 3409-3417.
13. ºRuberto K., ºEhsani H., Parvaneh S., Mohler J., Fain M., Sweitzer N.K., **Toosizadeh N.**, (2022) The association between heart rate behavior and gait performance: The moderating effect of frailty, Plos one, e0264013
14. ºRuiz M., ºPeña m., ºCohen A., ºEhsani H., Joseph B., Fain M., Mohler J., **Toosizadeh N.**, (2021) Physical and Cognitive Function Assessment to Predict Postoperative Outcomes of Abdominal Surgery, Journal of Surgical Research, 267, 495-505.
15. ºAsghari M., ºEhsani H., ºCohen A., ºTax T., Mohler J., **Toosizadeh N.**, (2021) Nonlinear Analysis of the Movement Variability Structure Can Detect Aging-Related Differences among Cognitively Healthy Individuals, Human Movement Science, 78, 102807.
16. Grijalva C., **Toozisadeh N**., Sindorf J., Chou Y.H., Laksari K., (2021) Dual-task performance is associated with brain MRI morphometry in individuals with mild cognitive impairment, Journal of Neuroimaging, 31 (3), 588-601.

17. **Toosizadeh N.**, ºEhsani H., Parthasarathy S., ºCarpenter B., ºRuberto K., Mohler J., Parvaneh S., (2020) Frailty and Heart Response to Physical Activity, Archives of Gerontology and Geriatrics, 93, 104323.
18. Follis S., Chen Z., Mishra S, Howe C.L., **Toosizadeh N.**, Dohm M., (2020) Comparison of Wearable Sensor to Traditional Methods in Functional Outcome Measures: A Systematic Review, Journal of Orthopaedic Research, 39 (10), 2093-2102.
19. ºArrué P., **Toosizadeh N.**, Babaee H., Laksari K., (2020) Low-rank representation of head impact kinematics: A data-driven emulator, Frontiers in Bioengineering and Biotechnology, 8, 1049.
20. ºKumar D.P., Wendel C., Mohler J., Laksari K., **Toosizadeh N.**, (2020) Between-day Repeatability of Sensor-based In-home Gait Assessment among Older Adults: Assessing the Effect of Frailty, Aging Clinical and Experimental Research, 33 (6), 1529-1537.
21. **Toosizadeh N.**, ºWahlert G., Fain M., Mohler J., (2020) The Effect of Vibratory Stimulation on the Timed-up-and-go Mobility Test: A Pilot Study for Sensory-related Fall Risk Assessment, Physiological Research, 69 (4), 721-730.
22. ºKumar D.P., **Toosizadeh N.**, Mohler J., ºEhsani H., Mannier C., Laksari K., (2020) Sensor-based Characterization of Daily Walking: A New Paradigm in Pre-frailty/Frailty Assessment, BMC Geriatrics, BMC geriatrics 20, 1-11.
23. ºEhsani H., Parvaneh S., Mohler J., Wendel C., Zamrini E., O'Connor K., **Toosizadeh N.**, (2020) Can motor function uncertainty and local instability within upper-extremity dual-tasking predict amnestic mild cognitive impairment and early-stage Alzheimer's disease? Computers in Biology and Medicine, 103705.
24. Taylor-Piliae R.E., Hsu C.H., Dolan H., **Toosizadeh N.**, Mohler J., (2019) A Novel Dual-Task Balance Challenge to Prevent Falls in Older Adults: A Randomized Pilot Study, Journal of Geriatric Medicine and Gerontology, 16 (1), 16.
25. Jansen C.P., **Toosizadeh N.**, Mohler J., Najafi B., Wendel C., Schwenk M., (2019) The Association Between Motor Capacity and Mobility Performance: Frailty as a Moderator, European Review of Aging and Physical Activity, In Press.
26. Yanquez F.J., Peterson A., Weinkauf C., Goshima K.R., Zhou W., Mohler J., ºEhsani H., **Toosizadeh N.**, (2019) Sensor-based Upper-extremity Frailty Assessment for the Vascular Surgery Risk Stratification, Journal of Surgical Research, 246, 403-410.
27. **Toosizadeh N.**, ºEhsani H., Wendel C., Zamrini E., O'Connor K., Mohler J., (2019) Screening older adults for amnestic mild cognitive impairment and early-stage Alzheimer's disease using upper-extremity dual-tasking, Scientific Reports, 9(1), 10911.
28. ºEhsani H., Mohler J., O'Connord K., Zamrini E., ºTirambulob C., **Toosizadeh N.**, (2019) The association between cognition and dual-tasking among older adults: The effect of motor function type and cognition task difficulty, Clinical Investigation in Aging, 14, 659-669.
29. ºEhsani H., Mohler J., Golden T., **Toosizadeh N.**, (2019) Upper-extremity function prospectively predicts adverse discharge and all-cause COPD readmission: A pilot study, International Journal of COPD, 14, 39.
30. ºYen T.C ., Mohler J., Dohm M., Laksari K., Najafi B., **Toosizadeh N.**, (2018) The Effect of Pain Relief on Daily Physical Activity: in-Home Objective Physical Activity Assessment in Chronic Low Back Pain Patients after Paravertebral Spinal Block, Sensors, 18 (9), 3048.
31. Taleban S., **Toosizadeh N.**, Junna S., Golden T., Ghazala S., Wadeea R., ºTirambulo C., Mohler J., (2018) Frailty Assessment Predicts Acute Outcomes in Patients Undergoing Screening Colonoscopy, Digestive Diseases and Sciences, 1-9.
32. Mousavi-Khatir R., Talebian S., **Toosizadeh N.**, Olyaei GR, Maroufi N., (2018) Disturbance of neck proprioception and feed-forward motor control following static neck flexion in healthy young adults, Journal of Electromyography and Kinesiology, 41, 160-167.
33. **Toosizadeh N.**, ºEhsani H., ºMiramonte M., Mohler J., (2018) Proprioceptive Impairments in High Fall Risk Older Adults: The Effect of Mechanical Calf Vibration on Postural Balance, BioMedical Engineering OnLine, 17 (1), 51.
34. **Toosizadeh N.**, Mohler J., Marlinski V., (2018) Low intensity vibration of ankle muscles improves balance in elderly persons at high risk of falling, PLOS ONE, 13(3): e0194720.
35. Mousavi-Khatir R., Talebian S., **Toosizadeh N.**, Olyaei GR., Maroufi N., (2018) The effect of static neck flexion on mechanical and neuromuscular behaviors of the cervical spine, Journal of Biomechanics, 72, 152-158.

36. ºEhsani H., Mohler J., Marlinski V., Rashedi E., **Toosizadeh N.**, (2018) The influence of mechanical vibration on local and central balance control, Journal of Biomechanics, 71, 59-66.
37. **Toosizadeh N.**, Wendel C., Hsu CH., Zamrini E., Mohler J., (2017) Frailty Assessment in Older Adults using Upper-extremity Function: Index Development, BMC Geriatrics, 17 (1), 117.
38. **Toosizadeh N.**, Berry C., Najafi B., Kraft M., Mohler J., (2017) Assessing upper-extremity motion: an innovative method to quantify functional capacity in patients with chronic obstructive pulmonary disease, PLOS ONE, 12 (2), e0172766.
39. Parvaneh S., Mohler J., **Toosizadeh N.**, Grewal G., Najafi B., (2017) Postural transitions during activities of daily living could identify frailty status – Application of wearable technology to identify frailty during unsupervised condition, Gerontology, 63 (5), 479-487.
40. Joseph B., **Toosizadeh N.**, Jokar T.O., ºHeusser M.R., Mohler J., Najafi B., (2016) Upper-Extremity Function Predicts Adverse Health Outcomes among Older Adults Hospitalized for Ground-Level Falls, Gerontology, 63 (4), 299-307.
41. **Toosizadeh N.**, Harati H., ºYen TC., Fastje C., Mohler J., Najafi B., Dohm M., (2016) Paravertebral spinal injection for the treatment of patients with degenerative facet osteoarthropathy: Evidence of motor performance improvements based on objective assessments, Clinical Biomechanics, 39, 100-108.
42. **Toosizadeh N.**, Stocker H., Thiede R., Mohler J., Mills J.L., Najafi B., (2016) Alterations in gait parameters with peripheral artery disease: The importance of pre-frailty as a confounding variable, Vascular Medicine, 21 (6), 520-527.
43. **Toosizadeh N.**, Najafi B., Reiman E.R., ºMager R.M., ºVeldhuizen J.K., O'Connor K., Zamrini E., Mohler J., (2016) Upper-extremity dual-task function: an innovative method to assess cognitive impairment in older adults. Frontiers in Aging Neuroscience, 8, 167.
44. Lei H., **Toosizadeh N.**, Schwenk M., Sherman S., Karp S., Sternberg E., Najafi B. (2016) A pilot clinical trial of objectively assess the efficacy of electroacupuncture on gait in patients with Parkinson's disease using body worn sensors. PLoS ONE, 11 (5), e0155613.
45. Gill S.V., Walsh M.K., Pratt J.A., **Toosizadeh N.**, Najafi B., Travison T.G. (2016) Changes in spatio-temporal gait patterns during flat ground walking and obstacle crossing one year after bariatric surgery, Surgery for Obesity and Related Diseases, 12 (5), 1080-1085.
46. **Toosizadeh N.**, Joseph B., ºHeusser M.H., Jokar T.O., Mohler J., Phelan H.R., Najafi B. (2016) Assessing Upper-extremity Motion: An Innovative, Objective Method to Identify Frailty in Older Bedbound Trauma Patients, Journal of American College of Surgeons, 223 (2), 240–248.
47. Mohler J., Wendel C., Taylor-Piliae R, **Toosizadeh N.**, Najafi B. (2015) Motor performance predicts prospective falls in frail or pre-frail, community-dwelling, older adults: Application of wearable technology to assess fall risk. Gerontology, 62 (6), 654-664.
48. ºYen TC, **Toosizadeh N.**, Howe C, Dohm M, Mohler J, Najafi B. (2015) Postural Balance Parameters as Objective Surgical Assessments in Low Back Disorders: A Systematic Review, Journal of Applied Biomechanics, 32 (3), 316-323.
49. Thiede R., **Toosizadeh N.**, Mills JL., Zaky M, Mohler J , Najafi B. (2015) Gait and balance assessments as early indicators of frailty in patients with known peripheral artery disease, Clinical Biomechanics, 32, 1-7.
50. Parvaneh S., Howe C., **Toosizadeh N.**, Honarvar B., Fain M., Najafi B., Mohler J., (2015) Regulation of Cardiac Autonomic Nervous System Control across Frailty Status: A Systematic Review, Gerontology,62 (1), 3-15.
51. **Toosizadeh, N.**, Mohler, J., Armstrong, D.G., Talal, T.K., Najafi, B., (2015) The Influence of Diabetic Peripheral Neuropathy on Local Postural Muscle and Central Sensory Feedback Balance Control, PLoS ONE, 10 (8): e0135255.
52. **Toosizadeh, N.**, ºChuan Yen, T., Howe C., Dohm M., Mohler J., Najafi B., (2015) Gait Behaviors as an Objective Surgical Outcome in Low Back Disorders: A Systematic Review, Clinical Biomechanics 30, 528-536.
53. **Toosizadeh, N.**, Mohler J., Lei H., Parvaneh S., Sherman S., and Najafi B. (2015) Physical Performance Assessment in Parkinson's Disease: Association between Objective In-clinic, Objective In-home, and Subjective/Semi-objective Measures, PLoS ONE, 10(4): e0124763.
54. **Toosizadeh, N.**, Mohler, J., Wendel, C., Najafi, B., (2015) Influences of Frailty Syndrome on Open-loop and Closed-loop Postural Control Strategy. Gerontology 61(1), 51-60.

55. **Toosizadeh, N.**, Mohler, J., Najafi, B., (2015) Assessing Upper Extremity Motion: An Innovative Method to Identify Frailty. Journal of the American Geriatrics Society, 63 (6), 1181-1186.
56. **Toosizadeh, N.**, Lei, H., Schwenk, M., Sherman S.J., Sternberg, E. Mohler, J., and Najafi, B., (2015) Does Integrative Medicine Enhance Balance in Aging Adults? – Proof of Concept for Benefit of Electro-acupuncture Therapy in Parkinson's Disease. Gerontology 61(1), 3-14
57. **Toosizadeh, N.**, Nussbaum, M.A. (2014) *Trunk Tissue Creep can Increase Spine Forces during a Subsequent Lifting Task. IIE Transactions on Occupational Ergonomics and Human Factors 2(2), 71-82
58. **Toosizadeh, N.**, Nussbaum, M.A. (2013) *Prolonged Trunk Flexion can Increase Spine Loads During a Subsequent Lifting Task: An Investigation of the Effects of Trunk Flexion Duration and Angle Using a Sagittally-Symmetric, Viscoelastic Spine Model. Journal of Musculoskeletal Research 16 (4), 1350022
59. **Toosizadeh, N.**, Bunting, M., Howel, C., Mohler, J., Sprinkle, J., Najafi, B., (2013) Motorized mobility scooters – The use of training/intervention and technology for improving driving skills in aging adults. Gerontology 60 (4), 357-365.
60. Hendershot, B., **Toosizadeh, N.**, Muslim, K., Madigan, M.L., and Nussbaum, M.A. (2013) *Evidence for an Exposure-Response Relationship between Trunk Flexion and Impairments in Trunk Postural Control. Journal of Biomechanics 46 (14), 2554-2557.
61. **Toosizadeh, N.**, Nussbaum, M.A. (2013) *Creep Deformation of the Human Trunk in Response to Prolonged and Repetitive Flexion: Measuring and Modeling the Effect of External Moment and Flexion Rate Annals of Biomedical Engineering 41(6): 1150-1161
62. **Toosizadeh, N.**, Nussbaum, M.A. (2013) *Disturbance and Recovery of Trunk Mechanical and Neuromuscular Behaviors Following Repetitive Lifting: Influences of Flexion Angle and Lift Rate on Creep-Induced Effects. Ergonomics 56 (6): 954-963.
63. Muslim, K., Bazrgari, B., Hendershot, B., **Toosizadeh, N.**, Nussbaum, M.A., and Madigan, M.L. (2012) *Disturbance and Recovery of Trunk Mechanical and Neuromuscular Behaviors Following Repeated Static Trunk Flexion: Influences of Duration and Duty Cycle on Creep-Induced Effects. Applied Ergonomics 44(4): 643-651.
64. **Toosizadeh, N.**, Nussbaum, M.A., Bazrgari, B., and Madigan, M.L. (2013) *Load-relaxation Properties of the Human Trunk in Response to Prolonged Flexion: Measuring and Modeling the Effect of Flexion Angle. PLoS ONE 7(11): e48625.
65. **Toosizadeh, N.**, and Haghpanahi, M. (2011) Generating a Finite Element Model of the CervicalSpine: Estimating Muscle Forces and Internal Loads. Scientia Iranica 18(6): 1237-1247.
66. Bazrgari, B., Hendershot, B., Muslim, K., **Toosizadeh, N.**, Nussbaum, M.A., and Madigan, M.L. (2011) *Disturbance and Recovery of Trunk Mechanical and Neuromuscular Behaviors Following Prolonged Trunk Flexion: Influences of Duration and External Load on Creep-Induced Effects. Ergonomics 54(11): 1043-1052.
67. Hendershot, B., Bazrgari, B., Muslim, K., **Toosizadeh, N.**, Nussbaum, M.A., and Madigan, M.L. (2011) *Disturbance and Recovery of Trunk Stiffness and Reflexive Muscle Responses Following Prolonged Trunk Flexion: Influence of Flexion Angle and Duration. Clinical Biomechanics 26(3): 250-256.

CONFERENCES/SCHOLARLY PRESENTATIONS

1. ºEskandari M., Parvaneh S., Khoubyari R., **Toosizadeh N**., (2021) Frailty Identification using Heart Rate Response to Walking and Machine Learning Approach, *Special Session, Computing in Cardiology (CinC)*, Brno, Czech Republic, September, 2021.
2. **Toosizadeh N**., Parvaneh S., Khoubyari S., (2021) Frailty among Older Adults with Heart Failure: Implications of Heart Rate Dynamic Assessment, *Special Session, Computing in Cardiology (CinC)*, Brno, Czech Republic, September, 2021.
3. Parvaneh S., **Toosizadeh N**., Khoubyari R., (2021) Impact of Frailty on Cardiac Autonomic System, *Special Session, Computing in Cardiology (CinC)*, Brno, Czech Republic, September, 2021
4. Khoubyari R., **Toosizadeh N**., Parvaneh S. (2021) Frailty Definition and Survey of Frailty Assessment Tools in Patients with Cardiovascular Disease, *Special Session, Computing in Cardiology (CinC)*, Brno, Czech Republic, September, 2021.

5. ºRuberto K., ºCarpenter B., ºEhsani H., Parvaneh S., Mohler J., **Toosizadeh N.**, (2019) Assessing Heart Rate Dynamics during Physical Activity: A New Marker of Frailty among Older Adults, International Conference on Frailty and Sarcopenia Research (ICFSR 2020), Toulouse, France.
6. Yanguez F.J., Peterson A., Weinkauf C., Goshima K.R., Zhou W., Mohler J., **Toosizadeh N.**, (2018) Novel Frailty Measures Correlate Vascular Outcomes. Vascular Society, 39th Annual Meeting, Colorado (SECOND PLACE WINNER PHIL JACOBS RESIDENT AWARD).
7. **Toosizadeh N.**, Taleban S, Mei Y, Golden TR, ºMiramontes M, Zaldizar C, Mohler J. (2017) Frailty Status Predicts Poor Outcomes in Older Adults Undergoing Screening Colonoscopy. International Conference on Frailty and Sarcopenia Research (ICFSR), Barcelona, Spain.
8. **Toosizadeh N.**, Wendel C., Mohler J. (2017) Sensor-based Upper Extremity Frailty Measurement. International Conference on Frailty and Sarcopenia Research (ICFSR), Barcelona, Spain.
9. Parvaneh S., Najafi B., **Toosizadeh N.**, Riaz I.B., Mohler J., (2016) Is There Any Association between Ventricular Ectopy and Falls in Community-Dwelling Older Adults?, 43rd Annual Conference of Computing in Cardiology, IEEE Computer Society Press, Canada-Vancouver.
10. Parvaneh S., Najafi B., **Toosizadeh N.**, Riaz I.B., Mohler J., (2016) Prevalence of Ventricular Ectopy in Older Adults across Different Frailty Levels, 43rd Annual Conference of Computing in Cardiology, IEEE Computer Society Press, Canada-Vancouver.
11. Parvaneh S., **Toosizadeh N.**, Moharreri S., (2015) Impact of mental stress on heart rate asymmetry. 42nd Annual Computing in Cardiology, IEEE Computer Society Press, Podium Presentation, France-Nice.
12. **Toosizadeh N.**, Talal TK., Mills J., Armstrong DG., Najafi B. (2015) Staying in the Loop While Maintaining Balance: Open versus Closed Loop Strategies for Maintaining Balance in Diabetic Peripheral Neuropathy. International Symposium on the Diabetic Foot (ISDF), Oral Presentation, Hague, Netherlands.
13. **Toosizadeh, N.**, Nussbaum, M.A., and Madigan, M.L. (2012) *Viscoelastic Modeling of the Lumbar Spine: the Effect of Prolonged Flexion on Internal Loads. Proceedings of the American Society of Biomechanics, Oral Presentation, Gainesville, Florida.
14. **Toosizadeh, N.**, Bazrgari, B., Hendershot, B., Muslim, K., and Nussbaum, M.A. (2010) *In vivo Load-Relaxation of the Trunk with Prolonged Flexion. Proceedings of the American Society of Biomechanics, Oral Presentation, Providence, Rhode Island.
15. Haghpanahi M., and **Toosizadeh N.**, (2008) *Generating Finite Element Model of the Cervical Spine, Investigating the Role of the Muscle Forces in Flexion/Extension. WSEAS International Conference on Biomedical Electronics and Biomedical Informatics (BEBI'08), Rhodes (Rodos) Island, Greece.
16. **Toosizadeh N.**, and Haghpanahi M., (2008) *Generating Exact Finite Element Model of Lower Cervical Spine (C3-C7). 6th IASTED international conference publication on biomedical engineering, Oral Presentation, Innsbruck, Austria.

CONFERENCES/ POSTERS

1. ºPetrillo K., ºFlores H., ºMayoral-Ortega I, ºJaved B., Dagar M., **Toosizadeh N.**, (2023) Brain Function Entropy Analysis during Dual-Tasking: Application of Functional Near Infrared Spectroscopy to Screen Alzheimer's Disease, Alzheimer's Association International Conference (AAIC) 2023, Amsterdam, Netherlands.
2. ºRudy P., ºAsghari M., **Toosizadeh N**., (2023) Sensor-based Frailty Assessment in Hospitalized COPD Patients: Predicting Post-Exacerbation Outcomes, Annual Scientific Meeting of the American Geriatrics Society (AGS) May 4 – 6, Long Beach, CA.
3. ºAckun P., ºArrue P., **Toosizadeh N.**, (2023) The Aggravating Effect of Frailty on Heart Rate Dynamics during Physical Activity in Patients with Heart Disease, Annual Scientific Meeting of the American Geriatrics Society (AGS) May 4 – 6, Long Beach, CA.
4. ºArrué P., Laksari l., **Toosizadeh N.**, Babaee H., (2020) Sports Head Impact Kinematics: Characterization and Data Augmentation, Biomedical Engineering Society (BMES) 2020, Virtual Meeting.
5. ºKumar D.P., Laksari K., Wendel C, Mohler J., º Ehsani H., **Toosizadeh N.**, (2019) Quality vs. Quantity of Gait: Repeatability of Sensor-based Walking Characterization in Older Adults, International Conference on Frailty and Sarcopenia Research (ICFSR 2020), Toulouse, France.

6. ºCohen A., ºPena M., ºRuiz M., Hamidi M., Joseph B., Ehsani H., Fain M., Mohler J., **Toosizadeh N.**, (2019) Assessing Frailty and Cognitive Function to Predict 30-Day Outcomes of Emergency Abdominal Surgery, International Conference on Frailty and Sarcopenia Research (ICFSR 2020), Toulouse, France.
7. ºRuiz M., ºCohen A., ºPena M., Hamidi M., Joseph B., ºEhsani H., Fain M., Mohler J., **Toosizadeh N.**, (2019) Sensor-based Physical Frailty and Cognitive Function Measures as Predictors of In-Hospital Outcomes in Abdominal Surgical Patients, International Conference on Frailty and Sarcopenia Research (ICFSR 2020), Toulouse, France.
8. ºKumar D.P., Mohler J., Laksari K., **Toosizadeh N.**, (2019) Frailty Assessment Based on the Quality of Everyday Walking. Gerontological Society of America (GSA) Annual Scientific Meeting, Austin, Texas.
9. Hindosh Z., ºTirambulo C., Sween A., Stipho F., Mohler J., **Toosizadeh N.**, (2019) The Effect of Intensity and Duration of Physical Activity on Cognition. July 14-18; Los Angeles, CA.
10. Sween A., Hindosh Z., ºTirambulo C., Mills C., Stipho F., ºEhsani H., Mohler J., **Toosizadeh N.**, (2019) Assessing the Association of Fear of Falling and Depression in Older Adults. Alzheimer's Association International Conference. July 14-18; Los Angeles, CA.
11. ºTirambulo C., ºEhsani H., ºSutherland-Mills C., Sween A., Hindosh Z., Stipho F., Mohler J., **Toosizadeh N.**, (2019) The Association Between Physical Frailty and Fear of Falling in Community Dwelling Older Adults. American Geriatric Society (AGS) Annual Scientific Meeting, Portland, Oregon, May2-4.
12. Sween A., Hindosh Z., Stipho F., ºTirambulo C., ºEhsani H., Mohler J., **Toosizadeh N.**, (2019) The Association Between Physical Frailty and Fear of Falling in Community Dwelling Older Adults. American Geriatric Society (AGS) Annual Scientific Meeting, Portland, Oregon, May2-4.
13. Wahlert G., ºTirambulo C., Mohler J., **Toosizadeh N.**, (2019) The Effect of Low Frequency Vibration on Timed Up and Go Performance in Elders at High Fall Risk. Abstract for Presidential Poster presentation at the American Geriatric Society (AGS) Annual Scientific Meeting, Portland, Oregon, May 2-4.
14. Taylor-Piliae R., Sutherland-Mills C., ºTirambulo C., **Toosizadeh N.**, Hsu P., Mohler J., (2018) Enhancing a matter of balance fall intervention with a pilot dual task balance challenge, Innovation in Aging, 517-517.
15. ºEhsani H., ºTirambulo C., ºSutherland-Mills Zamrini E., C, Mohler J., **Toosizadeh N.**, "Assessing cognition using dual-task motor function: The influence of cognitive task type", Alzheimer's Association International Conference, July 22-26, 2018, Chicago, IL, United States.
16. ºEhsani H., Mohler J., O'Connor K., Zamrini E., ºWahlert G., Fakhoury S., Gayten-Jenkins D., **Toosizadeh N.**, "An Upper-Extremity Function Dual-task to Identify Cognitive Status of Older Adults", 42nd Annual Meeting of the American Society of Biomechanics, August 8-11, 2018, Rochester, MN, United States.
17. Taylor-Piliae R., Mills C.D., ºTirambulo C., **Toosizadeh N.**, Hsu P., Mohler J., (2018) Enhancing a Matter of Balance Fall Intervention with a Pilot Dual Task Balance Challenge, Gerontological Society of America (GSA), Boston, Massachusetts, November 14-18.
18. Golden T., ºJunna S., Wadeea R., ºGhazala S., ºTirambulo C., **Toosizadeh N.**, Taleban S., Mohler J., (2018) Frailty Status Predicts Screening Colonoscopy Adverse Events, American Geriatric Society (AGS), Orlando, May 3-5.
19. ºTirambulo C., ºSutherland-Mills C., ºEhsani H., Golden T., **Toosizadeh N.**, Mohler J., (2018) Frailty and Depression in Older Adults: A Cross Sectional Study, American Geriatric Society (AGS), Orlando, May 3-5.
20. Zamrini E, Mohler J, O'Connor Kathy, ºFakhoury S, ºJenkins DG, **Toosizadeh N.**, (2018) Correlations between Rey Auditory Verbal Learning Test (AVLT) and Upper Extremity Dual Task Function in Detecting Cognitive Impairment, Alzheimer's Association International Conference (AAIC), Chicago, Illinois July 22-26.
21. ºFakhoury S, ºJenkins DG, Zamrini E, Mohler J, O'Connor Kathy , **Toosizadeh N.**, (2018) Assessment of dual-task motor function deterioration for detecting cognitive impairment, Alzheimer's Association International Conference (AAIC) 2018, Chicago, Illinois July 22-26.
22. ºJunna S., Golden T., ºGhazala S., Wadeea R., ºTirambulo C., **Toosizadeh N.**, Mohler J., Taleban S., (2018) Frailty Predicts Colonoscopy Outcomes in Patients Undergoing Screening, Digestive Disease Week (DDW), Washington, DC, June 2-5.
23. ºTirambulo C, Mills CS, ºEhsani H, Golden T, **Toosizadeh N**, Mohler J, (2018) Frailty and Depression in Older Adults: A Cross Sectional Study. American Geriatric Society, Orlando, Florida, May 3-5.
24. ºTirambulo C, Mills CS, **Toosizadeh N**, Lindley M, Golden T, Chen NK, Mohler J, Chou YH, (2017) fMRI and Upper-Extremity Function: The Effect of Dual-Tasking in Healthy Young and Healthy Older Adults. Cognitive Aging Conference, Atlanta, Georgia, May 3-6.

25. Parvaneh S, Dabanloo NJ, Rezaei S, Moharreri S, **Toosizadeh N.**, (2017) Heart Rate Asymmetry in Response to Colored Light. Computing in Cardiology (CinC), Rennes, France, September.
26. Golden TR, **Toosizadeh N**, Berry CE, Mei Y, Miramontes M, Zaldizar C, Mohler J, Ghazala L. (2017) Frailty Assessment for Predicting Readmission and Discharge Disposition among Patients Hospitalized for Chronic Obstructive Pulmonary Disease Exacerbation. ATS 2017 International Conference, Washington DC, May.
27. **Toosizadeh N**, Ghazala L, Golden TR, Berry C, Mei Y, ºMiramontes M, Zaldizar C, Mohler J. (2017) Frailty Assessment for Predicting Readmission and Discharge Disposition among Chronic Obstructive Pulmonary Disease (COPD) Patients. International Conference on Frailty and Sarcopenia Research (ICFSR), Barcelona, Spain.
28. Peterson R, Stocker H, **Toosizadeh N**, Wendel C, Fain M, Mohler MJ. (2017) Frailty transitions among older adults. International Association of Gerontology and Geriatrics (IAGG), San Francisco, California, July.
29. Stocker H, Peterson R, **Toosizadeh N**, Wendel C, Fain M, Mohler J. (2017) Frailty transitions among older adults. International Association of Gerontology and Geriatrics (IAGG), San Francisco, California, July.
30. Parvaneh S, Najafi B, **Toosizadeh N**, Riaz IB, Mohler J. (2016) Is There Any Association Between Ventricular Ectopy and Falls in Community-dwelling Older Adults? 3rd Annual Conference of Computing in Cardiology, IEEE Computer Society Press, Canada-Vancouver, September.
31. ºGary M., **Toosizadeh N.**, ºMager R., ºVeldhuizen J., O'Connor K., Mohler J., Najafi B., (2016) Upper-extremity function testing as an alternative to gait performance measures in older adults. Journal of the American Geriatrics Society (AGS), Long Beach, California
32. ºVeldhuizen J., ºMager R., **Toosizadeh N.**, Mohler J., Reiman E., O'Connor K., Najafi B., (2016) Association between cognitive impairment and upper-extremity performance under a dual task condition. Journal of the American Geriatrics Society (AGS), Long Beach, California
33. **Toosizadeh N.**, ºYen T.C., Dohm M., Fastje C., Najafi B., (2015) Can Paravertebral Facet Injection Improve Motor Performance in Patients with Degenerative Facet Osteoarthropathy? Proceedings of the American Society of Biomechanics, Poster Presentation, Columbus, Ohio.
34. **Toosizadeh N.**, Berry C., Bime C., Najafi B., Mohler J. (2015) An Association between Frailty and Pulmonary Function in Patients with Chronic Obstructive Pulmonary Disease (COPD) – Application of a Routine Frailty Assessment Approach using Wearable Technology. American Aging Association-44th Annual AGE Meeting, Marina Del Rey, California.
35. **Toosizadeh N.**, Talal TK., Mills J., Armstrong DG., Najafi B. (2015) Assessing Balance Impairment in Diabetic Patients using Open-loop Closed-loop Postural Control Strategies. The American Podiatric Medical Association (AMPA), Poster Presentation, Orlando, Florida.
36. ºYen T.C., **Toosizadeh N.**, Dohm M., Fastje C., Najafi B., (2014) Improvement in Physical Performance in Patients with Degenerative Facet Osteoarthropathy Lumbosacral Spine following Paravertebral Facet Injection. Orthopaedic Research Society (ORS) Annual Meeting, Las Vegas, Nevada.
37. Mahmoud AZ., **Toosizadeh N.**, Tallal T.K., Armstrong D.G., Mills J.L., Najafi B., (2014) The Association between Frailty and Wound Size, Disability, and Pain: A Pilot Study. Qatar Foundation Annual Research Conference (ARC'14), Doha, Qatar.
38. **Toosizadeh N.**, ºHeusser M., Zangbar-Sabegh B., Joseph B., Mohler J., Najafi B. (2014) Objective Frailty Assessment in Trauma Patients using a Novel Upper-extremity Approach. Gerontology Society of America (GSA), Washington, DC.
39. ºHeusser M., **Toosizadeh N.**, Zangbar-Sabegh B., Mohler J., Joseph B., Najafi B., (2014) Upper Extremity Frailty Assessment in Trauma Patients Using Wearable Sensor Technology. Biomedical Engineering Society (BMES), San Antonio, Texas.
40. **Toosizadeh, N.**, Mohler, J., Najafi, B. (2014) A Novel Upper Limb Kinematics Assessment Using Wearable Sensors to Identify Frailty. Journal of the American Geriatrics Society (AGS), Orlando, Florida. 60: S121.
41. Lei, H., **Toosizadeh, N.**, Schwenk, M., Sherman S., Karp, S., Parvaneh, S., Esternberg, E., and Najafi, B. (2013) Objective Assessment of Electro-acupuncture Benefit for Improving Balance and Gait in Patients with Parkinson's Disease. American Academy of Neurology (AAN), Philadelphia, Pennsylvania.
42. **Toosizadeh N.**, Lei, M., Schwenk, M., Sherman S., Karp, S., Esternberg, E., and Najafi, B. (2013) Effectiveness of Electro-acupuncture Therapy in Improving Gait and Balance in People with Parkinson's Disease', International Research Congress of Integrative Medicine and Health (IRCIHM), Miami, Florida.

43. **Toosizadeh, N.**, Mohler, J., Najafi, B. (2013) Frailty Assessment by Characterization of Open-loop and Closed-loop Strategy of Postural Control in Older Adults', Gerontology Society of America (GSA), New Orleans, Louisiana.
44. **Toosizadeh, N.**, Mohler, J., Najafi, B. (2013) Frailty Assessment by Characterization of Open-loop and Closed-loop Strategy of Postural Control in Older Adults. AHSC Frontiers in Biomedical Research Poster Forum, Tucson, Arizona.
45. Muslim, K., Hendershot, B., **Toosizadeh, N.**, Nussbaum, M.A., Bazrgari, B., and Madigan, M.L. (2012) *Disturbances to Intrinsic Stiffness and Reflexive Muscle Responses Following Repeated Static Trunk Flexion. Proceedings of the American Society of Biomechanics, Gainesville, Florida.
46. Hendershot, B., Bazrgari, B., Muslim, K., **Toosizadeh, N.**, Nussbaum, M.A., and Madigan, M.L. (2010) *Disturbances to Intrinsic Stiffness and Reflexive Muscle Responses Following Prolonged Trunk Flexion. Proceedings of the American Society of Biomechanics, Providence, Rhode Island.
47. Hendershot, B., Bazrgari, B., Muslim, K., **Toosizadeh, N.**, Nussbaum, M.A., and Madigan, M.L. (2010) *Disturbances to Intrinsic Stiffness and Reflexive Muscle Responses Following Prolonged Trunk Flexion. 9th Annual SBES Graduate Research Symposium, Winston-Salem, North Carolina.

GRANTS AND CONTRACTS

Federal Research Grants

1. NIH 1 R01 AG082541-01A1: The role of CMV in HIV-associated accentuated aging (Toosizadeh/Nikolich-Zugich).
   07/01/2023-06/30/2028
   (mPI) $3,904,460 – Effort: 1.2 Person Months
   Persons with HIV (PWH) on anti-retroviral therapy can have near-normal lifespan, but many suffer greatly from HIV-related non-aids conditions (HANA) that manifest themselves as accentuated aging and limited evidence suggests that this happens only in those PHW infected with cytomegalovirus (CMV). We have discovered new biomarkers of CMV infection and propose to use them to test whether and how CMV may be driving accentuated aging in PWH. Results should help to set future CMV-specific treatments to achieve successful aging with HIV.

1. NSF 2311611 – I-CORPS: Sensor-based frailty assessment tool using a smart watch (Toosizadeh)
   04/01/2023-03/31/2024
   (PI) $50,000
   The proposed I-CORP grant provides the opportunity to establish a commercialization plan for a new objective sensor-based frailty assessment product. This product incorporates an app for smartwatch for objective, easy, and quick assessment of frailty among older adults.

2. NIH 1 R01 AG076774-01A1: Heart Rate Dynamics in Response to Upper-Extremity Function Test to Identify Irreversible Frailty After Invasive Therapy in Older Adults with Advanced Heart Disease (Toosizadeh)
   01/2023-01/2027
   (PI) $1,313,940.00 – Effort: 3.40 Person Months
   Advanced heart diseases lead to a reduced blood supply from the heart and consequently fatigue and deficits in performing physical activity. In the proposed research, we will assess the lack of physiological reserve in older adults with advanced heart disease, focusing on motor and cardiac function, to develop a novel, objective, quick, and accurate frailty score. We designed this approach to enhance candidate selection of older adults going through invasive therapies for advanced heart diseases.

3. NSF 2236689 - CAREER: Dynamic Modeling of Cardiac, Brain, and Motor Systems in Response to Provocative Testing for Frailty Assessment (Toosizadeh)
   03/2023-02/2028
   (PI) $580,246– Effort: 1.00 Person Months

In this career award I will establish a novel mathematical frailty model based on interaction between several physiological systems during a stress-response testing module.

4. NIH R21EB033454 (Trailblazer): WARE-Care: a novel RF-based system to assess and prevent falling 07/2022-12/2024 (Cao)
   (Co-I) $582,741 – Effort: 0.95 Person Months
   We propose a complementary sensor for frail and fall risk assessment in the nursing facility during the night. To achieve this goal, we will build and evaluate a robust, non-invasive millimeter wave (mmWave) based sensing system for fall risk and fall detection to work during the night to collect and assess older adults' falling data. We have formed a research team with expertise in radar signal processing, machine learning, frailty and fall risk analysis, telehealth, clinical trials, and medical experts within the University of Arizona (UArizona) and have connected with a local nursing center to test this low-cost, small, and portable motion-monitoring system: WARE-Care: mmWave based fall Assessment and pRevEntion.

5. NIH R01 NS102220-01A1: Development of High-Speed and Quantitative Neuro MRI Technologies for Challenging Patient Populations (Chen)
   07/01/2018-06/31/2023
   (Co-I) $ 2,749,319 – Effort: 0.24 Person Months
   Optimize multiplexed sensitivity encoded (MUSE) DTI and fMRI techniques to allow for fast acquisition of sub-millimeter resolution, artifact-free, and quantitative MR images within a 20-min scan time, better tolerable for challenging populations such as stroke or pediatric patients.

6. NIH 1R21AG059202-01A1: Functional Capacity Assessment in Hospitalized Bed-bound COPD Patients; Predicting Outcomes (Toosizadeh/Mohler)
   09/15/2019 - 05/31/2023
   (PI) $410,454 – Effort: 2.54 Person Months
   The major goal of this project is to provide data to improve identification of vulnerable older adults with chronic obstructive pulmonary disease using a quick and simple objective assessment tool feasible for bed-bound hospitalized patients.

7. NIH R21AG055852: MCI and Alzheimer's Disease Screening using Upper-extremity Dual-task (Toosizadeh/Mohler)
   06/01/2017 - 05/31/2019
   (PI) $430,937 – Effort: 3.00 Person Months
   Validate an objective, easy-to-perform, and quick tool for cognitive screening in older adults with Alzheimer's disease and Alzheimer's type mild cognitive impairment. This method is based on simultaneous assessment of upper-extremity functioning and cognitive performance, using wearable sensor technology and novel biomechanical approaches for assessing motion.

8. 3U48DP005002-01S4 CDC Healthy Brain Research Network Center (Mohler/Fain)
   7/1/2014 - 6/30/19
   (Scholar 10% 1.2 months) Research in cognitive aging, mild cognitive impairment and Alzheimer's and related dementias, in collaboration with statewide collaborators (Arizona Center on Aging, ADHS, AZ-PRC, Hartford Nursing Center, Flinn Foundation Aging and Cognition Consortium, the Banner Alzheimer's Consortium, and 4 national HBRN collaborating centers)

9. NIH 1 R21 AG078786-01A1: Subsensory Stochastic Vibratory Stimulation to Assess and Improve Aging-related Proprioceptive Deficits Associated with Balance Recovery (*PENDING 20th Percentile*) (Toosizadeh/Madigan)
   04/01/23 - 03/31/25
   (PI) $424,197– Effort: 2.82 Person Months
   This research focuses on identifying the proprioceptive area responsible for balance recovery among older adults based on a novel objective approach that incorporates stochastic vibratory stimulation and wearable

sensor technology. Further, in the proposed research, we will implement vibratory stimulation to improve balance recovery behavior among high fall risk older adults with proprioceptive deficits.

State Research Grants

1. Acceleration for Success: Characterizing Navigation Under Emergency Circumstances to Develop an Escape Guidance System
   (Hazeli/Toosizadeh/Ekstrom)
   7/1/2022 – 7/31/23
   (Co-I) $45,523
   Virtual-reality platform to assess human escape mechanism under stress

2. Acceleration for Success: Subsensory Stochastic Vibratory Stimulation to Assess and Improve Aging-related Proprioceptive Deficits Associated with Balance Recovery
   (Toosizadeh/Fain/Taylor-Piliae/LaFleur)
   7/1/2022 – 7/31/23
   (PI) $49,387
   Improving dynamic balance in older adults with proprioceptive deficits using stochastic stimulation

3. Arizona Alzheimer's Consortium: Assessing Dynamic Interaction between Motor and Brain Functions during Dual-tasking for Identifying Alzheimer's Disease: The Reliability Analysis for fNIRS Application
   (Toosizadeh/Fain, Rapcsak, Chou)
   7/1/2022 – 6/31/23
   (PI) $24,919
   Cognitive impairment screening using wearable technology

4. Tech Launch Asset Development UA13-153: Upper Extremity Frailty Assessment Method
   (Toosizadeh)
   2/2022 – 2/2023
   (PI) $46,189
   Frailty assessment using smart watch

5. Bio5 Rapid Grant: Application of Functional Near-infrared Spectroscopy for Identifying Alzheimer's Disease Based on the Motor and Brain Function Dynamical Interplay
   (Toosizadeh/Fain, Rapcsak, Chou, LaFleur)
   1/2022 – 7/2022
   (PI) $49,343
   Cognitive impairment screening using wearable technology

6. Innovation in Healthy Aging Behavioral Research: Combined Nonlinear Dynamic Analysis of Motor and Brain Function during Dual-tasking for Quick and Accurate Alzheimer's Disease Screening: Clinical Application of Functional Near-infrared Spectroscopy
   (Toosizadeh/Fain, Rapcsak, Chou, LaFleur)
   2/2022 – 6/2022
   (PI) $24,922
   Cognitive impairment screening using wearable technology

7. RG2017-13 Arizona AHEC: Novel Dual-task Balance Challenge to Prevent Falls in Older Adults
   (Taylor-Piliae/Mohler/Toosizadeh)
   9/2017 - 9/2018
   (Co-PI) $10,000
   Improve balance and gait among older adults using low-cost in-home dual-task training

8. UA Pepper Scholar – Acceleration For Success (AFS): Improving Post-operative Outcomes in Older Adults Undergoing Traumatic Emergency Major Abdominal Surgical (Toosizadeh/Gries)
   04/01/2018 - 03/31/2019
   (PI) $40,000
   The objective of this one-year PESP Independent Research Project is to explore the prevalence of clinical frailty syndrome using a validated upper-extremity function (UEF) method among older adults undergoing traumatic emergency major abdominal surgical procedure for predicting 30-day outcomes, including surgical complications, length of stay, discharge disposition, readmission, and mortality.

9. BIO5 Institute Team Scholars Program (Toosizadeh/Chen/Barnard)
   07/01/2019-06/30/2020
   (PI) $65,000
   Early-stage detection of brain network alterations due to the Alzheimer's disease: Dual-task-based fMRI analysis using machine learning approach

10. Flinn Foundation: Soft, Battery-Free, Wireless, and Wearable Digital-Health Platform for Continuous Frailty Assessment (Gutruf/Toosizadeh)
    11/1/2019 - 4/30/2021
    (Co-PI) $100,000 – Effort: 0.12 Person Months
    Development of a battery-free and soft platform that relies on far field power transfer to ultra-soft electronics. Through the creation of this long-range, soft electronic mesh, a robust system utilizing multimodal sensing capabilities can be realized for chronic health monitoring.

LIST OF COLLABORATORS

Graduate and Postdoc Advisors and Supervisors – Last name, first name, and organizational affiliations

Najafi, Bijan, Baylor College of Medicine
Nussbaum, Maury, A, Virginia Tech, Industrial and Systems Engineering
Agnew, Michael, J, Virginia Tech, Industrial and Systems Engineering
Madigan, Michael, L, Virginia Tech, Industrial and Systems Engineering
Sturges, Robert, H, Virginia Tech, Industrial and Systems Engineering
West, Robert, L, Virginia Tech, Mechanical Engineering
Haghpanahi, Mohammad, Iran University of Science and Technology, Biomedical Engineering

Collaborators on grants and publications – Last name, first name, and organizational affiliations

Fain, Mindy, the Division of General Internal Medicine, Geriatrics, and Palliative Medicine, ACOA
Nikolich, Janko, Immunobiology, ACOA, University of Arizona
Taleban, Sasha, University of Arizona
Weinkauf, Craig, University of Arizona
Yanquez, Federico, University of Arizona
Parthasarathy Sairam, University of Arizona
Hazeli, Kavan, University of Arizona, Aerospace and Mechanical Engineering
Cao, Siyang, University of Arizona, Electrical and Computer Engineering
Taylor-Piliae, Ruth, E, University of Arizona, Nursing
Hsu, Chiu-Hsieh, University of Arizona, Public Health
Mohler, Martha, J, University of Arizona, Biomedical Engineering
Schwenk, Michael, Heidelberg University, Network Aging Research
Zamrini, Edward, University of Utah, Neurology
Laksari, Kaveh, University of Arizona, Biomedical Engineering
Dohm, Michael, University of Arizona, Orthopaedic Surgery
Marlinski, Vladimir, St. Joseph Medical Center, Barrow Neurological Institute

Rashedi, Ehsan, Rochester Institute of Technology, Industrial and Systems Engineering
Kraft, Monica, University of Arizona, Medicine
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Joseph, Bellal, University of Arizona, Surgery
Mills, Joseph L., Baylor College of Medicine, Surgery
Reiman, Eric R., Banner Alzheimer's Institute
Lei, Hong, University of Arizona, Neurology
Sternberg Esther M., University of Arizona, Medicine
Gill, Simone, Boston University, Occupational Therapy
Chen Nan-kuei, University of Arizona, Biomedical Engineering
Gutruf, Philipp, University of Arizona, Biomedical Engineering
Barnard Kobus, University of Arizona, Computer Science
Bazrgari Babak, University of Kentucky, Biomedical Engineering
Hendershot Brad D., DoD-VA Extremity Trauma & Amputation Center of Excellence

These are true and accurate statements of my activities and accomplishments. I understand that misrepresentation in securing continuing status and promotion may lead to dismissal or suspension under ABOR Policy 6-201 J.