

**Malaka (Graci) Finco, PhD, CPO, MS**  
*Curriculum Vitae*

Assistant Professor, Physical Therapy  
Secondary Appointment in Center for Anatomical Sciences  
Director of the Limb Loss and Difference Lab  
University of North Texas Health Science Center in Fort Worth, Texas  
Graci.Finco@unthsc.edu

**Education**

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- 2022                    **Ph.D. in Biomedical Sciences**  
*“Quantifying Musculoskeletal & Biomechanical Symmetry  
in Individuals with Lower-Limb Amputation:  
A Step Towards Assessing Injury & Fall Risk”*  
Structural Anatomy and Rehabilitation Sciences  
University of North Texas Health Science Center, Fort Worth, TX
- 2016                    **M.S. in Orthotics and Prosthetics**  
*“Kinematic comparison of body-powered and myoelectric  
protheses in users with transradial amputations”*  
Baylor College of Medicine, Houston, TX
- 2014                    **B.S. in Biology**  
Minors in Chemistry, History, and Journalism  
University of North Texas, Denton, TX

**Positions and Residencies**

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- 2024-present            **Assistant Professor, tenure-track**  
(60% research, 30% teaching, 10% service)  
Primary Appointment: Department of Physical Therapy  
Secondary Appointment: Structural Anatomy and Rehabilitation Sciences  
University of North Texas Health Science Center, Fort Worth, TX
- 2023-2024            **Faculty- Instructor (100% research effort)**  
also the **Assistant Dean, Strategy and Assessment**, School of Health  
Professions for one month prior to changing institutions  
Interdisciplinary Consortium on Advanced Motion Performance Lab,  
Department of Surgery  
Baylor College of Medicine, Houston, TX  
**Joint Appointment** with the Michael E. DeBakey Veterans Affairs  
**Joint Appointment** with the Orthotics and Prosthetics Department
- 2022-2023            **Postdoctoral Associate**  
Interdisciplinary Consortium on Advanced Motion Performance Lab,  
Department of Surgery  
Baylor College of Medicine, Houston, TX

**Joint Appointment** with the Michael E. DeBakey Veterans Affairs  
**Joint Appointment** with the Orthotics and Prosthetics Department

2017-2019      **Research Prosthetist and Orthotist**, Shirley Ryan AbilityLab (formerly known as the Rehabilitation Institute of Chicago), Chicago, IL

2017              **Clinician**, Orthotic and Prosthetic Associates, Houston, TX

2015-2016      **3-month Residency Rotations:**  
                    Hanger Clinic, Austin, TX  
                    Lake Prosthetics, Euless, TX  
                    VA Hospital, Houston, TX  
                    Muilenburg Prosthetics, Houston, TX  
                    Texas Scottish Rite, Dallas, TX  
                    Hanger Clinic, San Antonio, TX

### **Certification**

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2019- present      Certified Prosthetist Orthotist- CPO #04086

### **Research Interests**

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Using clinical outcome measure scores and wearable sensors to help inform clinical decision-making in prosthetic practice, risk of falls and overuse injuries in people who use lower-limb prostheses, user perspectives of orthotic and prosthetic devices.

### **Research Skills**

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Wearable sensors (inertial measurement units and pressure insoles), survey data collection using REDCap, anatomical imaging, clinical outcome measures, motion capture.

### **Fellowships and Grants**

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2023-2024      Renewal of **Amputee Coalition** contract below

2022 - 2023      **Amputee Coalition** \$99,971 (ongoing annual contract)  
External program evaluator for the Amputee Coalition, which is the largest non-profit for individuals with limb difference in the US.

2021 - 2022      **American Orthotic and Prosthetic Association** \$14,254  
Center for Orthotic & Prosthetic Learning & Outcomes/Evidence-Based Practice  
“Wearable Sensors in Prosthetic Practice: Can Walking Symmetry Supplement Clinical Measures to Assess Fall Risk?”  
Principal Investigator: Pilot Grant

2021 - 2022      **Renewal of T32 NIH Training Fellowship** \$25,320  
Neurobiology of Aging and Alzheimer’s Disease

2020 - 2021      **T32 NIH Training Fellowship** \$24,320  
Neurobiology of Aging and Alzheimer’s Disease

## Honors

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- 2023            **Dean’s Fellowship Award \$3,000**  
Given to students who are awarded a competitive grant that covers at least half the Postdoctoral Associate stipend at Baylor College of Medicine
- 2022            **Dean’s Fellowship Award \$1,000**  
Given to students who are awarded a competitive grant that covers at least half the PhD stipend at the University of North Texas Health Science Center
- 2022            **Center for Healthy Aging Award \$250**  
Selected from 12 T32 Fellow Podium Presentations at Annual Symposium  
Title: “Differentiating Influences of Type II Diabetes and Lower-Limb Amputation on Musculoskeletal Health”
- 2021            **Center for Healthy Aging Award \$250**  
Selected from 11 T32 Fellow Podium Presentations at Annual Symposium  
Title: “Quantifying Muscular Differences in Anatomical Donors with Lower-Limb Amputations”
- 2021            **Outstanding Graduate Student for 2020-2021 \$250**  
Structural Anatomy and Rehabilitation Sciences

## Travel Awards

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- 2020            **Student Travel Award \$250**  
American Society of Biomechanics
- 2020            **Graduate School of Biomedical Sciences Travel Award \$500**  
University of North Texas Health Science Center

## Dissemination of Research

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### Publications:

- 2024            **Finco MG**, Mir N, Gresham G, Huisinsh-Scheetz M. Ethical considerations for digital health technology in older adult care. *The Lancet Healthy Longevity*. DOI: [10.1016/S2666-7568\(23\)00236-2](https://doi.org/10.1016/S2666-7568(23)00236-2).
- 2024            Gavette H, McDonald CL, Kostick-Quenet K, Mullen A, Najafi B, **Finco MG**. Advances in prosthetic technology: a perspective on ethical

considerations for development and clinical translation. *Frontiers: Rehabilitation Science*. Accepted on Dec 29, 2023. DOI: [10.3389/fresc.2023.1335966](https://doi.org/10.3389/fresc.2023.1335966).

- 2024 Hickson T, Kenworthy S, **Finco MG**, Mullen A. Reporting and management of equinus deformity after partial foot amputation: A Scoping Review. *Journal of Prosthetics and Orthotics*. Accepted Jan 2, 2024.
- 2023 **Finco MG**, Najafi B, Zhou H, Hamad A, Ibrahim R, Fadwa A. Game-based intradialytic non-weight-bearing exercise training increased gait speed and reduced postural sway in older adults with diabetes: a single-blind randomized controlled trial. *Scientific Reports*. DOI: [10.1038/s41598-023-41290-3](https://doi.org/10.1038/s41598-023-41290-3).
- 2023 **Finco MG** & Finnerty C (co-first authors), Ngo W, Menegaz R. Indications of musculoskeletal health in deceased male individuals with lower-limb amputations: comparison to non-amputee and diabetic controls. *Scientific Reports*. DOI: [10.1038/s41598-023-34773-w](https://doi.org/10.1038/s41598-023-34773-w).
- 2023 **Finco MG**, Patterson RM, Moudy SC. A pilot case series to concurrently validate inertial measurement units and motion capture equipment in individuals who use unilateral lower-limb prostheses. *Journal of Rehabilitation and Assistive Technologies Engineering*. DOI: [10.1177/20556683231182322](https://doi.org/10.1177/20556683231182322).
- 2023 **Finco MG**, Cay G, Lee M, Garcia J, Salazar E, Tan TW, Armstrong DG, Najafi B. Taking a Load Off: User Perceptions of Smart Offloading Walkers for Diabetic Foot Ulcers Using the Technology Acceptance Model. *Sensors*. DOI: [10.3390/s23052768](https://doi.org/10.3390/s23052768).
- 2023 Zulbaran-Rojas A & Lee MG (co-first authors), Bara R, Flores-Camargo A, Spitz G, **Finco MG**, Bagheri AB, Modi D, Shai F, Najafi B. Electrical Stimulation to Regain Lower Extremity Perfusion and Muscle Endurance in Patients with Musculoskeletal Post-Acute Sequelae of SARS CoV-2. *Physiological Reports*. DOI: [10.14814/phy2.15636](https://doi.org/10.14814/phy2.15636)
- 2023 Park C, Rouzi MD, Atique MU, **Finco MG**, Mishra RK, Barba-Villalobos G, Crossman E, Amushie C, Nguyen J, Calarge C, Najafi B. Machine Learning-Based Aggression Detection in Children with ADHD using Sensor-Based Physical Activity Monitoring. *Sensors*. DOI: [10.3390/s23104949](https://doi.org/10.3390/s23104949)
- 2023 Bagheri AB, Rouzi MD, Koohbanani NA, Mahoor MH, **Finco MG**, Lee M, Najafi B, Chung J. Potential applications of artificial intelligence and machine learning on diagnosis, treatment, and outcome prediction to

address health care disparities of chronic limb-threatening ischemia. *Seminars in Vascular Surgery*. DOI: [10.1053/j.semvascsurg.2023.06.003](https://doi.org/10.1053/j.semvascsurg.2023.06.003).

- 2022 **Finco MG**, Sumien N, Moudy SC. Clinical evaluation of fall risk in older individuals who use lower-limb prostheses: a scoping review. *Journal of the American Geriatrics Society*. DOI: [10.1111/jgs.18223](https://doi.org/10.1111/jgs.18223).
- 2022 **Finco MG**, Menegaz R. Skeletal Asymmetries in Anatomical Donors with Lower-Limb Amputations. *PM&R: The Journal of Injury, Function, and Rehabilitation*. DOI: [10.1002/pmrj.12599](https://doi.org/10.1002/pmrj.12599)
- 2022 **Finco MG**, Moudy SC, Patterson RM. Normalization of kinematic walking symmetry data to inform clinical considerations for individuals who use lower-limb prostheses. *Journal of Prosthetics and Orthotics*. DOI: [10.1097/JPO.0000000000000435](https://doi.org/10.1097/JPO.0000000000000435).
- 2022 **Finco MG & Kim S** (co-first authors), Ngo W, Menegaz R. A review of musculoskeletal adaptations in individuals following major lower-limb amputation. *Journal of Musculoskeletal and Neuronal Interactions*. [PMC9186459](https://pubmed.ncbi.nlm.nih.gov/39186459/)

#### **In Review:**

**Finco MG**. (Invited Book Chapter). Future Trends and Research in Orthoses. Murphy: Atlas of Orthoses and Assistive Devices, 6e.

**Finco MG**, McDonald CL, Moudy SC. Clinical fall risk assessment for people who use a unilateral lower-limb prosthesis. *PM&R*.

**Finco MG**, McDonald CL, Moudy SC. Does terminology matter? Perspectives from people with limb difference, clinicians, and researchers. *Archives of Physical medicine and Rehabilitation*.

Finco MG\*, Ouattas A\*, El-Refaei N, Momin AS, Azarian M, Najafi B. Assessing the Acceptability and Effectiveness of a Novel Therapeutic Footwear in Reducing Foot Pain and Improving Function Among Older Adults: A Crossover Randomized Controlled Trial. *Gerontology*.

\*indicates co-first authorship.

#### **National/International Podium Presentations:**

- 2023 **Finco MG**. Moving towards a decentralized healthcare model to promote improved outcomes and access to care in older adults. Part of Symposium: “*Digital Health Technology for Assessing and Monitoring Function and for Delivering Supportive Care Interventions in older Adults.*” American Geriatrics Society. Annual Scientific Meeting. Long Beach, CA.
- 2023 **Finco MG**. *Amputation and Prevention*. American Professional Wound Care Association. Philadelphia, PA.

- 2023 **Finco MG.** *Biomechanics of Amputees.* DFCON23- American Limb Preservation Society's (ALPS) Annual Interdisciplinary Diabetic Foot Conference. Anaheim, CA.
- 2023 **Finco MG, McDonald CL, Moudy SC.** *Prospective Fall Risk Measures for Unilateral Lower-Limb Prosthesis Users.* American Orthotics and Prosthetics Association. National Assembly. Indianapolis, IN.
- 2022 **Finco MG, Moudy SC.** *Clinical Outcomes and Gait Parameters Associated with Falls in Individuals Who Use Unilateral Lower-Limb Prostheses.* American Orthotic and Prosthetic Association. National Assembly.
- 2022 **Finco MG.** Musculoskeletal and Biomechanical Adaptations Post-Amputation. Part of Symposium: "*Anatomy of Amputation: Surgical, Biomechanical, and Educational Implications.*" American Association for Anatomy's Annual Meeting at Experimental Biology. Philadelphia, PA.
- 2022 **Finco MG, Moudy S, Sibley A.** *Relationship Between Gait Asymmetry to Falls & Trips in Active Individuals with Traumatic Unilateral Amputation.* American Academy of Orthotists and Prosthetists Annual Meeting and Scientific Symposium. Atlanta, GA.
- 2021 **Finco MG, Moudy S, Patterson R.** *Walking Symmetry in Lower Limb Prosthesis Users: Considerations for Clinical Practice and Future Research.* American Academy of Orthotists and Prosthetists Annual Meeting and Scientific Symposium. Virtual.
- 2020 **Finco MG, Moudy S, Stevens G, Bugnariu N, Patterson R.** *Gait Symmetry: Comparison of K2 and K3 Feet in Users with Unilateral Transtibial Amputation.* American Orthotic and Prosthetic Association National Assembly. Virtual.
- 2017 **Finco MG, Keener K, Amonette W, Krouskop T.** *Kinematic Comparison of Body-Powered and Myoelectric Prostheses in Users with Transradial Amputations,* in MEC17 Symposium -A Sense of What's to Come, Fredericton, NB, Canada, ISBN 978-1-55131-190-6.

**Poster Presentations and Peer-Reviewed Abstracts:**

- 2023 **Finco MG, Cay G, Garcia J, Salazar E, Tan TW, Armstrong DG, Najafi B.** Perceptions of smart offloading boots for diabetic ulcers using the technology acceptance model. International Symposium on the Diabetic Foot. Poster presentation.

- 2023 **Finco MG**, El-Refaei N, Momin A, Flores Camargo A, Najafi B. User perceptions of innovative shoes designed to improve comfort: older adults with and without type II diabetes. International Symposium on the Diabetic Foot. Poster presentation.
- 2023 Lee M, Fadwa Al-Ali, **Finco MG**, Hamad A, Ibrahim R, Mathew M, Najafi B. Comparative effectiveness of two different intradialytic intervention programs for improving gait and balance. National Kidney Foundation. Poster presentation.
- 2021 **Finco MG**, Kim S, Menegaz R. Muscular Asymmetries in Anatomical Donors with Lower-Limb Amputations. Experimental Biology. Federation of American Societies for Experimental Biology (FASEB) Journal 35(S1). Poster presentation.
- 2020 **Finco MG**, Moudy S, Hensel K, Papa E, Bugnariu N, Patterson R. Lower Limb Kinematic Asymmetries and Correlation to Clinical Measures in Individuals with Parkinson's Disease. American Society of Biomechanics National Conference. Poster presentation.
- 2018 Kaveny KJ, Simon AM, Lenzi T, Finucane SB, Seyforth EA, **Finco MG**, Culler KL, Hargrove L. Initial results of a variable speed knee controller for walking with a powered knee and ankle prosthesis. BIOROB 2018 - 7th IEEE International Conference on Biomedical Robotics and Biomechatronics. IEEE Computer Society, 2018. pp. 764-769

**Local Podium Presentations:**

- 2022 **Finco MG**, Finnerty C, Ngo W, Holley B, Menegaz R. Differentiating the Influence of Amputation and Diabetes on Musculoskeletal Asymmetries in Individuals with Lower-Limb Amputation. UNTHSC Research Appreciation Day & T32 Symposium.
- 2021 **Finco MG**, Kim S, Menegaz R. Muscular Asymmetries in Anatomical Donors with Lower-Limb Amputations: Preliminary Results. UNTHSC Research Appreciation Day & T32 Symposium.

**Invited Speaking to General Audiences**

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- 2023 **Strategies to Prevent, Recognize, & Manage Burnout.** Webinar for the American Academy of Orthotists and Prosthetists. Online.
- 2021 **Identifying and Leveraging Your Values to Avoid Burnout.** Selected for a Business Education Presentation at the American Orthotics and Prosthetics Association National Assembly. Boston, MA.

- 2021 **Monthly science topic contributor on live radio** throughout 2021 based on 2020 performance below. Topics range from memory to dinosaurs.
- 2020 Selected from over 100 applicants to speak live on the **#20phds20mins program** on radio station 3RRR in Melbourne, Australia based on a two sentence lay-summary of research. Nov. 22, 2020. Link to the episode: <https://www.rrr.org.au/explore/programs/einstein-a-go-go/episodes/13986-einstein-a-go-go-22-november-2020>
- 2020 **Walking Symmetry in Prosthesis Users: Using Anatomical and Biomechanical Techniques to Inform Clinical Practice.** General Interest Seminar and Talk (GIST) to department faculty and students. Lay-summary of PhD research for a half-hour with questions to over 65 biological scientists (geneticists, microbiologists, etc.).
- 2019 **Post-operative and Transitional Care for a New Amputee.** Continuing Medical Education presentation to 50+ local healthcare providers, Fort Worth Amputee Coalition, Fort Worth, TX.

### **Teaching Interests**

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Clinical research in orthotics and prosthetics, clinical care in orthotics and prosthetics, pathologies in orthotics and prosthetics, upper and lower extremity anatomy with dissection, typical and pathological gait biomechanics.

### **Teaching Assistantships**

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- Fall 2021 **Musculoskeletal and Nervous System Anatomy** for the Texas College of Osteopathic Medicine Medical School Program. Upper-limb with dissection (20hrs). Lower-limb with dissection (20hrs). Head and neck with dissection (20hrs). Nervous system with prosection (16hrs).
- Summer 2021 **Regulatory Affairs** for the Clinical Research Management Master's Program. (10hrs).
- Summer 2021 **Clinical Data Management** for the Clinical Research Management Master's Program. (10hrs).
- Spring 2021 **Musculoskeletal Anatomy** for the Medical Science Master's Program. (40hrs).

### **Guest Teaching Lectures**

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- 2023 **Ethical Considerations for Integrating Research into O&P Clinical Practice**, MS students in Orthotics and Prosthetics, BCM, Houston, TX
- 2022 **Locomotion**, PhD students in Structural Anatomy and Rehabilitation, UNTHSC, Fort Worth, TX



- 2022                    **Kinematics**, PhD students in Structural Anatomy and Rehabilitation, UNTHSC, Fort Worth, TX
- 2022                    **Locomotion**, undergraduates, UNT, Denton, TX
- 2022                    **Methodological Considerations**, undergraduates, UNT, Denton, TX
- 2021                    **Muscles, Actions, Innervations, & Blood Supply of the Upper Arm and Arm**, pre-matriculation medical school and physical therapy students, UNTHSC, Fort Worth, TX
- 2019                    **Research in Orthotics and Prosthetics**, orthotics and prosthetics students, Baylor College of Medicine, Houston, TX
- 2018                    **Research in Orthotics and Prosthetics**, orthotics and prosthetics students, Baylor College of Medicine, Houston, TX

## **Mentorship**

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2023-2025	<b>Cally Soh, MS Student, Orthotics and Prosthetics, BCM</b> Research mentorship provided over 1.5 years to satisfy MS thesis requirements. Incidence of near-falls and self-reported prospective fall data among people who use a lower-limb prosthesis.
2023-2025	<b>Hayden Gavette, MS Student, Orthotics and Prosthetics, BCM</b> Research mentorship provided over 1.5 years to satisfy MS thesis requirements. Clinical outcome measure scores associated with orthotic device use in people with neurological impairments.
2023-2025	<b>Jake Courchene-Roy, MS Student, Orthotics and Prosthetics, BCM</b> Research mentorship provided over 1.5 years to satisfy MS thesis requirements. A scoping review on technology to help improve gait in people with partial foot amputation.
2021-present	<b>Caitlyn Finnerty, Undergraduate Student, The College of New Jersey</b> Research mentorship provided through an 8-week summer internship program, which extended to an abstract submission and co-first author manuscript. Experimental Biology 2022: Musculoskeletal differences between amputated and non-amputated lower limbs.
2021-2022	<b>Wayne Ngo, Texas College of Osteopathic Medicine, UNTHSC</b> Research mentorship provided through a summer volunteer internship, which extended to an abstract submission and manuscript. Experimental Biology 2022: Additive effects of diabetes and lower-limb amputation on osteoarthritis with comparison to diabetic and healthy controls. Abstract Award Finalist. \$500 prize.
2021-2022	<b>Sam Stauffer, PhD Student, University of Delaware</b> General mentorship provided for a year through the American Academy of Orthotist and Prosthetists.
2020- 2021	<b>Courtney Miller, PhD Student, UNTHSC</b> General mentorship provided for a year through UNTHSC's Graduate School of Biomedical Sciences.
2020-present	<b>Emily Hurst, CPO, MS</b> General mentorship provided for a year through the American Academy of Orthotist and Prosthetists.
2018- 2019	<b>Annie Lewis, CPO, MS</b> Kinematic comparison of myoelectric and body-powered prostheses. Presented as Master's thesis at Baylor College of Medicine in 2019.

## Service

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2023-2025	<b>Selected, Board of Directors:</b> The Orthotics and Prosthetics Foundation
2023	<b>Grant Reviewer:</b> Department of Defense
2022 -2024	<b>Selected, Research Committee:</b> American Orthotic and Prosthetic Association
2021	<b>Skype A Scientist:</b> Taught 7 <sup>th</sup> & 8 <sup>th</sup> grade students about prosthetics
2021	<b>Grant Reviewer:</b> Department of Defense
2021	<b>STEM Outreach Speaker:</b> Summer Bridge for High School Students
2021	<b>Abstract Reviewer:</b> American Society of Biomechanics South Central Regional Conference
2021	<b>Invited, Organized Session Leader:</b> Psychosocial Considerations in Stroke Rehabilitation. Moderator. American Academy of Orthotists and Prosthetists 2021 National Assembly
2020	<b>Grant Reviewer:</b> Department of Defense
2020	<b>STEM Outreach Speaker:</b> Summer Bridge for High School Students

## Professional Organizations

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2021- present	American Association for Anatomy
2020- present	American Society of Biomechanics
2020- present	International Womxn in Biomechanics
2014- present	American Academy of Orthotists and Prosthetists
2014- present	American Orthotics and Prosthetics Association