

Malaka (Graci) Finco, CPO/LPO, MS
Curriculum Vitae

<https://gracifinco.my.canva.site/>

Arlington, Texas

Graci.Finco@bcm.edu

Education

- 2022 **Ph.D. in Biomedical Sciences**
Passed with distinction on Oct 18, 2022
*“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

- 2022- present **Postdoctoral Associate**, Interdisciplinary Consortium on Advanced
Motion Performance Lab, Baylor College of Medicine, Houston, TX
- 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
Mullenburg Prosthetics, Houston, TX
Texas Scottish Rite, Dallas, TX
Hanger Clinic, San Antonio, TX

Certification and License

- 2019- present Certified Prosthetist Orthotist- CPO #04086
- 2019- present Texas State Licensed Prosthetist Orthotist- #1997

Research Interests

Prosthetic alignment and socket design, wearable sensors in clinical practice, orthotic and prosthetic product development, musculoskeletal changes in individuals with limb loss.

Research Skills

Motion capture, wearable sensors (inertial measurement units and pressure insoles), data collection using REDCap, anatomical imaging, anatomical dissection, histology, science communication.

Fellowships and Grants

- 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

- 2022 **Dean’s Fellowship Award** \$1,000
Given to students who are awarded a competitive grant that covers at least half the PhD stipend
- 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

- 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

Publications:

- 2022 **Finco MG**, Menegaz R. Skeletal Asymmetries in Anatomical Donors with Lower-Limb Amputations. *PM&R: The Journal of Injury, Function, and Rehabilitation*. <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*. Accepted Nov 2, 2021. Online first.
- 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/)
- 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*. In Press. Accepted Dec 16, 2022.

In Review:

- 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.
- 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
- 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 double-blind randomized controlled trial
- 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.

In Progress:

- Finco MG & Kim S** (co-first authors), Menegaz R. Structural and physiological plasticity in thigh musculature of anatomical donors with lower-limb amputation.
- Finco MG**, Moudy SC, McDonald C. Preferred terminology of individuals in the limb loss community.

Finco MG, Cay G, Najafi B, Armstrong D. Patient perceptions and adherence to offloading boots for treatment of diabetic ulcers.

National/International Podium Presentations:

- 2022 **Finco MG**, Moudy S. 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.

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.

Peer-Reviewed Abstracts:

- 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

Invited Speaking to General Audiences

2022 **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

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

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

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

2021-2022	Caitlyn Finnerty, Undergraduate Student, The College of New Jersey Research mentorship provided through an 8-week summer internship program, which extended to an abstract submission and manuscript. Experimental Biology 2022: Musculoskeletal differences between amputated and non-amputated lower limbs.
2021-2022	Wayne Ngo, Texas College of Osteopathic Medicine, UNTHSC

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.

- 2021-2022 **Sam Stauffer, PhD Student, University of Delaware**
General mentorship provided for a year through the American Academy of Orthotist and Prosthetists.
- 2020- 2021 **Courtney Miller, PhD Student, UNTHSC**
General mentorship provided for a year through UNTHSC's Graduate School of Biomedical Sciences.
- 2020 **Emily Hurst, CPO, MS**
General mentorship provided for a year through the American Academy of Orthotist and Prosthetists.
- 2019 **Joey Zisk, CPO, MS**
Effect of prosthetic ankle-foot repositioning on transtibial socket pressures during ramp walking. Presented at the 2020 American Academy of Orthotists and Prosthetists Annual Meeting.
- 2019 **Landon Davis, CPO, MS**
Initial development and testing of a novel, low-cost prosthetic socket to be used in low-income areas with limited resources. Presented at the 2020 American Academy of Orthotists and Prosthetists Annual Meeting.
- 2018- 2019 **Annie Lewis, CPO, MS**
Kinematic comparison of myoelectric and body-powered prostheses. Presented as Master's thesis at Baylor College of Medicine in 2019.

Service

- 2022 - 2024 **Research Committee:** American Orthotic and Prosthetic Association
- 2021 **Skype A Scientist:** Taught 7th & 8th grade students about prosthetics
- 2021 **Grant Reviewer:** Department of Defense
- 2021 **STEM Outreach Speaker:** Summer Bridge for High School Students
- 2021 **Abstract Reviewer:** American Society of Biomechanics South Central Regional Conference

- 2021 **Organized Session Leader:** Psychosocial Considerations in Stroke Rehabilitation. Moderator. American Academy of Orthotists and Prosthetists 2021 National Assembly
- 2020 **Grant Reviewer:** Department of Defense
- 2020 **STEM Outreach Speaker:** Summer Bridge for High School Students
- 2016- 2017 **Research Consultant:** Baylor College of Medicine Orthotics and Prosthetics Students
- 2017- 2018 **Volunteer Coordinator:** Achilles International Chicago Chapter

Professional Organizations

- 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