Philippe Malcolm, Ph.D.

6160 University Dr. South, Omaha, NE 61812
pmalcolm@unomaha.edu
617 487 11 48
H-index: 25, 3280 citations
https://scholar.google.be/citations?user=Q1XcsrUAAAAJ&hl=en&oi=sra

Positions

2023-present	Associate Professor, University of Nebraska at Omaha Biomechanics Research Department and Center for Research in Human Movement Variability
2017-2023	Associate Professor, University of Nebraska at Omaha Biomechanics Research Department and Center for Research in Human Movement Variability
2015-2016	Postdoctoral Research Fellow, Harvard University John A. Paulson School of Engineering and Applied Sciences and Wyss Institute for Biologically Inspired Engineering Role: Biomechanics team lead in DARPA-funded exosuit project Advisor: Walsh C. J.
Summer 2013	Visiting Scholar, Carnegie Mellon University Department of Mechanical Engineering Advisor: Collins S. H.
2010-2014	Postdoctoral Assistant, Ghent University Department of Movement and Sports Sciences Laboratory of Movement Science Advisor: De Clercq D.

Education

2004-2010	Ph.D., Ghent University Thesis: Influence of intrinsic and extrinsic determinants on the transition from walking to running. Advisor: De Clercq D.
2002-2003	M.Sc. in Academic Teaching, Ghent University
2000-2002	M.Sc. in Physical Education (Kinesiology), Ghent University
1998-2000	B.Sc. in Physical Education (Kinesiology), Ghent University

Teaching

2021- Present	Lab Methods in Biomechanics II (last overall instructor rating 4.50 / 5)
2017- Present	Undergraduate Biomechanics (last overall instructor rating 4.35/5)
2017-2019	MATLAB for Movement Sciences (last overall instructor rating 4.25/5)
2017-2019	Guest lectures for Motor Control I
2013-2014	Honors Program in Movement Sciences, 1st and 2nd year of Kinesiology M.Sc.: Advanced program to prepare students for jobs as sports scientists or the start of a Ph.D.
2012-2013	Lecturer in Individual Movement Activities 1st and 2nd year of Kinesiology M.Sc.: Coordination of sports and sports didactics courses from 5 teaching assistants specialized in track and field, artistic gymnastics, and swimming.
2008-2011	Movement Analysis of Fitness Training, 1st year of Kinesiology M.Sc.: EMG and isokinetic measurement lab
2004-2014	Sport-Specific Movement Analysis, 1st year of kinesiology M.Sc.: Demonstration of measurement methods in sports biomechanics and hands-on projects
2004-2014	Movement Analysis, 3rd year of Kinesiology B.Sc.: Practical exercises on gait analysis and lifting ergonomics with treadmill, force plate, video, and motion capture
2004-2014	Biomechanics, 2nd year of kinesiology B.Sc.: Practical exercises on ground reaction force measurement and data analysis in Excel

Mentoring and Advising

2024-present	Postdoc advisor van den Berghe P.
2023-present	Ph.D. advisor Shin S.
2021-2023	MSc. Advisor Razavi H., now a Ph.D. student at the University of Michigan
2020-2023	PhD. advisor Dzewaltowski A., now a postdoc at Rosalind Franklin Institute
2021-2022	MSc. advisor Kowalczyk K., now a Ph.D. student at the University of Georgia
2021-2022	MSc. advisor Senatore S., now a Ph.D. student at the University of Memphis, Tennessee
2018-2022	PhD. advisor Gonabadi A., now Assistant Research Director at Madonna Rehab Hospital
2017-2020	Ph.D. advisor Antonellis P., now a scientific consultant at NIRx
2017-2018	MSc. advisor Frederick C., now senior regulatory affairs coordinator at UMass Bringham
2015	Co-mentor of one design-engineering final project at Harvard University
2010-2015	Co-advisor Ph.D. Breine B., now staff scientist and coach at La Verrerie, Freiburg
2011-2015	Advisor of eight M.Sc. theses in Kinesiology and one M.Sc. thesis in electromechanical engineering
2013-2015	Mentor of two honors theses
2004-2010	Mentor of seven M.Sc. theses in Kinesiology

Student Grant Support

2024	HMV Conf. Greatest Clinical Impact Award	Razavi H.	
2023	UNO GRACA	Shin S	$5000
2023	UNO GRACA	Shin S.	$5000
2023	UNO GRACA	Razavi H.	$5000
2022	CEHHS Outstanding graduate student	Kowalczyk K.	
2022	RMASB best MSc. presentation finalist	Kowalczyk K.	
2020	HMVC Promising young student finalist	Gonabadi A.	
2020	UNO GRACA	Kowalczyk K.	$5000
2020	UNO GRACA	Senatore S.	$5000
2020	Outstanding Graduate Student Award	Gonabadi A.	
2019	UNO GRACA	Gonabadi A.	$5000
2018	NCSSR workshop Forum Participation Award	Gonabadi A.	
2018	NCSSR OpenSim virtual workshop	Gonabadi A	
2019	AMTI travel grant	Antonellis A.	$1000
2019	NIH Summer course	Antonellis A.	
2019	Paul Beck Scholarship	Antonellis A.	$500
2019	UNO GRACA	Antonellis A.	$5000
2019	UNO FUSE	Runyan T.	$1000
2018	UNO GRACA	Antonellis A.	$5000

Publications

Manuscripts as First Author (* is equal contribution)

1. **Malcolm, P.**, Galle, S., Van Den Berghe, P., De Clercq, D., 2018. Exoskeleton assistance symmetry matters: Unilateral assistance reduces metabolic cost, but relatively less than bilateral assistance. J. Neuroeng. Rehabil. 15. https://doi.org/10.1186/s12984-018-0381-z
2. **Malcolm, P.**, Galle, S., Derave, W., de Clercq, D., 2018. Bi-articular knee-ankle-foot exoskeleton produces higher metabolic cost reduction than a weight-matched mono-articular exoskeleton. Front. Neurosci. 12.
3. **Malcolm, P.**, Rossi, D. M., Siviy, C., Lee, S., Quinlivan, B. T., Grimmer, M., and Walsh, C. J. "Continuous Sweep versus Discrete Step Protocols for Studying Effects of Wearable Robot Assistance Magnitude" Journal of NeuroEngineering and Rehabilitation 14, no. 1 (2017): 72. doi:10.1186/s12984-017-0278-2
4. **Malcolm, P.**, Lee, S., Crea, S., Siviy, C., Saucedo, F., Galiana, I., Panizzolo, F. A., Holt, K. G., and Walsh, C. J. "Varying Negative Work Assistance at the Ankle with a Soft Exosuit during Loaded Walking" Journal of NeuroEngineering and Rehabilitation 14, no. 1 (2017): 62. doi:10.1186/s12984-017-0267-5
5. **Malcolm, P.**, Galle, S., and Clercq, D. De. "Fast Exoskeleton Optimization" ***Science*** 356, no. 6344 (2017): 1230–1231. doi:10.1126/science.aan5367 **(IF 37)**
6. Galle, S., **Malcolm, P.***, Collins, S. H., and Clercq, D. De. "Reducing the Metabolic Cost of Walking with an Ankle Exoskeleton: Interaction between Actuation Timing and Power" Journal of NeuroEngineering and Rehabilitation 14, no. 1 (2017): 35. doi:10.1186/s12984-017-0235-0
7. **Malcolm, P.**, Quesada, R. E., Caputo, J. M., and Collins, S. H. "The Influence of Push-off Timing in a Robotic Ankle-Foot Prosthesis on the Energetics and Mechanics of Walking" Journal of NeuroEngineering and Rehabilitation 12, no. 1 (2015): 21. doi:10.1186/s12984-015-0014-8
8. **Malcolm, P.**, Breine, B., Frederick, E., Cheung, J., and Clercq, D. De. "Correlations between Strike Index and 5,000 and 10,000 M Performance in Male Runners" Footwear Science 5, no. S1 (2013): doi:10.1080/19424280.2013.799581
9. **Malcolm, P.**, Derave, W., Galle, S., and Clercq, D. De. "A Simple Exoskeleton That Assists Plantarflexion Can Reduce the Metabolic Cost of Human Walking" PLoS One 8, no. 2 (2013): e56137. doi:10.1371/journal.pone.0056137, (**>475 citations)**.
10. **Malcolm, P.**, Segers, V., Caekenberghe, I. Van, and Clercq, D. De. "Experimental Study of the Influence of the M. Tibialis Anterior on the Walk-to-Run Transition by Means of a Powered Ankle-Foot Exoskeleton." Gait & Posture 29, no. 1 (2009): 6–10. doi:10.1016/j.gaitpost.2008.05.016
11. **Malcolm, P.**, Fiers, P., Segers, V., Caekenberghe, I. Van, Lenoir, M., and Clercq, D. De. "Experimental Study on the Role of the Ankle Push off in the Walk-to-Run Transition by Means of a Powered Ankle-Foot-Exoskeleton" Gait & Posture 30, no. 3 (2009): 322–327. doi:10.1016/j.gaitpost.2009.06.002
12. *De Smet, K., ***Malcolm, P.**, Lenoir, M., Segers, V., De Clercq, D., "Effects of Optic Flow on Spontaneous Overground Walk-to-Run Transition" Experimental brain research 193, no. 4 (2009): 501–8. doi:10.1007/s00221-008-1648-6

Manuscripts as Co-author

1. AC Dzewaltowski, P Antonellis, A Mohammadzadeh Gonabadi, S Song, **P Malcolm**. Perturbation-based estimation of within-stride cycle metabolic cost. Journal of NeuroEngineering and Rehabilitation 21 (1), 131. 2024. https://doi.org/10.1186/s12984-024-01424-8
2. AC Dzewaltowski, **P Malcolm**. Enhanced Muscle Activation Using Robotic Assistance Within the Electromechanical Delay: Implications for Rehabilitation? IEEE Transactions on Neural Systems and Rehabilitation Engineering. 2024. https://doi.org/10.1109/tnsre.2024.3419688 **(Selected as highlight).**
3. Hafizur Rahman, Todd Leutzinger, Mahdi Hassan, Molly Schieber, Panagiotis Koutakis, Matthew A Fuglestad, Holly DeSpiegelaere, G Matthew Longo, **P. Malcolm**, Jason M Johanning, George P Casale, Iraklis I Pipinos, Sara A Myers. Peripheral artery disease causes consistent gait irregularities regardless of the location of leg claudication pain Annals of Physical and Rehabilitation Medicine, 2024
4. A Mohammadzadeh Gonabadi, P Antonellis, AC Dzewaltowski, SA Myers, I Pipinos, **P Malcolm.** Design and Evaluation of a Bilateral Semi-Rigid Exoskeleton to Assist Hip Motion. Biomimetics 9 (4), 211. 2024.
5. A Dzewaltowski, II Pipinos, MN Schieber, J Johanning, GP Casale,**P. Malcolm**. Lower limb revascularization leads to faster walking but with less efficient mechanics in claudicating patients Journal of Biomechanics 162, 111880. 2024
6. SC Senatore, KZ Takahashi, **P Malcolm.** Using human-in-the-loop optimization for guiding manual prosthesis adjustments: a proof-of-concept study Frontiers in Robotics and AI 10, 1183170. 2023. https://doi.org/10.3389/frobt.2023.1183170
7. Can a passive unilateral hip exosuit diminish walking asymmetry? A randomized trial K Kowalczyk, M Mukherjee, **P Malcolm** Journal of NeuroEngineering and Rehabilitation 20 (1), 88. https://doi.org/10.1186/s12984-023-01212-w
8. A biomechanical perspective on walking in patients with peripheral artery disease GM Bapat, AZ Bashir, **P Malcolm**, JM Johanning, II Pipinos, SA Myers Vascular Medicine 28 (1), 77-84
9. Antonellis, P., Mohammadzadeh Gonabadi, A., Myers, S. A., Pipinos, I. I., & **Malcolm, P.** (2022). Metabolically efficient walking assistance using optimized timed forces at the waist. ***Science Robotics***, 7(64), eabh1925. https://www.science.org/stoken/author-tokens/ST-391/full Conference presentation: https://mediaspace.wisc.edu/media/DW22_Malcolm%2C+Philippe+-+June+13th+%28Screen%29/1_pf9n51tb
10. Takashi, S., Nielsen, J., Takahashi, K., **Malcolm, P.**, Mukherjee, M. (2022). A passive exoskeleton can assist split-belt adaptation. *Experimental Brain Research, 240*(4), 1159. 1176.
11. Mohammadzadeh Gonabadi, A., Antonellis, P., **Malcolm, P.** (2021). Differentiating fallers from non-fallers using nonlinear variability analyses of data from a low-cost portable footswitch device: a feasibility study. *Acta of Bioengineering and Biomechanics.*
12. A Mohammadzadeh Gonabadi, P Antonellis**, P Malcolm,** Differences between joint-space and musculoskeletal estimations of metabolic rate time profiles, PLoS computational biology 16 (10), e1008280. https://doi.org/10.1371/journal.pcbi.1008280
13. Papachatzis N, **Malcolm P**, Nelson CA, Takahashi KZ. Walking with added mass magnifies salient features of human foot energetics. Journal of Experimental Biology. 2020 15;223(12).
14. Gonabadi AM, Antonellis P, **Malcolm P**. A system for simple robotic walking assistance with linear impulses at the center of mass. IEEE Transactions on Neural Systems and Rehabilitation Engineering. 2020. https://doi.org/10.1109/TNSRE.2020.2988619
15. Antonellis P, Frederick CM, Gonabadi AM, **Malcolm P**. Modular footwear that partially offsets downhill or uphill grades minimizes the metabolic cost of human walking. Royal Society open science. 2020 Feb 5;7(2):191527.
16. Hedrick, E.A., **Malcolm, P.,** Wilken, J.M. and Takahashi, K.Z., 2019. How Prosthetic Ankle Stiffness & Load Carriage Affect Metabolic Energy Expenditure During Walking. JNER, 2019
17. Jinsoo Kim, Giuk Lee, Roman Heimgartner, Dheepak Arumukhom Revi, Nikos Karavas, Danielle Louise Ryan Nathanson, Ignacio Galiana, Asa Eckert-Erdheim, Patrick Murphy, David Perry, Nicolas Menard, **Malcolm P**, Conor J. Walsh; Reducing the metabolic rate of walking and running with a versatile, portable soft exosuit. ***Science***, 2019. https://www.science.org/doi/pdf/10.1126/science.aav7536

18. B Breine, **P Malcolm**, S Galle, P Fiers, EC Frederick, D De Clercq, Running speed-induced changes in foot contact pattern influence impact loading rate, European Journal of sport science 19 (6), 774-783 2019
19. M Grimmer, BT Quinlivan, S Lee, **P Malcolm**, DM Rossi, C Siviy, CJ Walsh, Comparison of the human-exosuit interaction using ankle moment and ankle positive power inspired walking assistance, Journal of biomechanics 83, 76-84 2 2019
20. P Antonellis, S Galle, D De Clercq, **P Malcolm**, Altering gait variability with an ankle exoskeleton PloS one 13 (10), e0205088 2018.
21. Kim, M., Ding, Y., **Malcolm, P**., Speeckaert, J., Siviy, C. J., Walsh, C. J., and Kuindersma, S. "Human-in-the-Loop Bayesian Optimization of Wearable Device Parameters" PLoS ONE 12, no. 9 (2017): doi:10.1371/journal.pone.0184054
22. Lee, G., Kim, J., Panizzolo, F. A., Zhou, Y. M., Baker, L. M., Galiana, I., **Malcolm, P.**, and Walsh, C. J. "Reducing the Metabolic Cost of Running with a Tethered Soft Exosuit" Sci. Robot 2, no. 6 (2017): 6708–31. doi:10.1126/scirobotics.aan6708
23. Quinlivan, B. T., Lee, S., **Malcolm, P.**, Rossi, D. M., Grimmer, M., Siviy, C., Karavas, N., Wagner, D., Asbeck, A., Galiana, I., and Walsh, C. J. "Assistance Magnitude versus Metabolic Cost Reductions for a Tethered Multiarticular Soft Exosuit" Science Robotics 2, no. 2 (2017): eaah4416. doi:10.1126/scirobotics.aah4416
24. Breine, B., **Malcolm, P**., Segers, V., Gerlo, J., Derie, R., Pataky, T., Frederick, E. C., and Clercq, D. De. "Magnitude and Spatial Distribution of Impact Intensity Under the Foot Relates to Initial Foot Contact Pattern" J Appl Biomech (2017): 1–21. doi:10.1123/jab.2016-0206
25. Galle, S., Derave, W., Bossuyt, F., Calders, P., **Malcolm, P.**, and Clercq, D. De. "Exoskeleton Plantarflexion Assistance for Elderly" Gait and Posture 52, no. November (2017): 183–188. doi:10.1016/j.gaitpost.2016.11.040
26. Breine, B., **Malcolm, P.**, Caekenberghe, I. Van, Caekenberghe, I. Van, Fiers, P., Frederick, E. C., Clercq, D. De, Frederick, E. C., and Clercq, D. De. "Initial Foot Contact and Related Kinematics Affect Impact Loading Rate in Running" Journal of Sports Sciences 35, no. 15 (2017): 1556–1564. doi:10.1080/02640414.2016.1225970
27. Ding, Y., Panizzolo, F. A., Siviy, C. J., **Malcolm, P**., Galiana, I., Holt, K. G., and Walsh, C. J. "Effect of Timing of Hip Extension Assistance during Loaded Walking with a Soft Exosuit" Journal of NeuroEngineering and Rehabilitation 13, no. 1 (2016): 87. doi:10.1186/s12984-016-0196-8
28. Lee, S., Crea, S., Galiana, I., Malcolm, P., Walsh, C. J., Galiana, I., Asbeck, A., Walsh, C. J., **Malcolm, P**., Walsh, C. J., Galiana, I., Asbeck, A., and Walsh, C. J. "Controlling Negative and Positive Power at the Ankle with a Soft Exosuit" Proceedings - IEEE International Conference on Robotics and Automation 2016–June, (2016): 3509–3515. doi:10.1109/ICRA.2016.7487531
29. Breine, B., **Malcolm, P**., Caekenberghe, I. Van, Fiers, P., and Clercq, D. De. "Kinematic Differences between (A)typical Initial Rearfoot and Midfoot Contact Patterns" Footwear Science 7, no. S1 (2015): S102-103.
30. Galle, S., **Malcolm, P**., Derave, W., and Clercq, D. De. "Uphill Walking with a Simple Exoskeleton: Plantarflexion Assistance Leads to Proximal Adaptations" Gait and Posture 41, no. 1 (2015): 246–251. doi:10.1016/j.gaitpost.2014.10.015
31. Galle, S., **Malcolm, P**., Derave, W., and Clercq, D. De. "Enhancing Performance during Inclined Loaded Walking with a Powered Ankle–foot Exoskeleton" European Journal of Applied Physiology 114, no. 11 (2014): 2341–51. doi:10.1007/s00421-014-2955-1
32. Breine, B., **Malcolm, P**., Frederick, E. C., and Clercq, D. De. "Relationship between Running Speed and Initial Foot Contact Patterns" Medicine and Science in Sports and Exercise 46, no. 8 (2014): 1595–603. doi:10.1249/MSS.0000000000000267
33. Caekenberghe, I. Van, **Malcolm, P**., Segers, V., and Clercq, D. De. "A Gradual Shift in Initial Foot-to-Ground Contact Patterns Depending upon Acceleration" Footwear Science 5, no. S1 (2013): S88-89.
34. Galle, S., **Malcolm, P.**, Derave, W., and Clercq, D. De. "Adaptation to Walking with an Exoskeleton That Assists Ankle Extension" Gait & Posture 38, no. 3 (2013): 495–499. doi:10.1016/j.gaitpost.2013.01.029

Code Repositories and Biomechanical Datasets in Supplementary Materials

1. Code and a folder structure for processing and analyzing cyclical gait data. https://github.com/philippemalcolm/GaitCodeTemplatePublic
2. Stridenormalized time series, metabolic cost, and algorithms for perturbation-based metabolic cost estimation (Dzewaltowski et al., 2014)
3. Stridenormalized time series and metabolic costs of walking with a semi-rigid hip exoskeleton (Gonabadi et al., 2024)
4. Stridenormalized timeseries and metabolic costs of walking experiments with a robotic waist tether (Antonellis et al., 2020)
5. Stridenormalized time series and metabolic costs of walking experiments and muscle-driven simulations (Gonabadi et al., 2020)
6. Stridenormalized time series of hardware optimization experiments of a robotic waist tether (Gonabadi et al., 2020)
7. Stridenormalized time series and metabolic costs of walking experiments with different footwear and treadmill inclinations (Antonellis et al., 2020)
8. Stridenormalized time series and metabolic costs of walking with a biarticular knee-ankle-foot exoskeleton (Malcolm et al., 2018)
9. Stridenormalized time series and metabolic costs of walking and running with a portable hip exosuit (Kim et al., 2019)

International Patent

1. Kowalczyk, K., **Malcolm, P.**, Takashi, S. Passive Exosuit for Asymmetry Rehabilitation, International Publication Number WO 2023/192982 A2

Awards and Recognition

2024	Article on faster-than-biological assistance in TNSRE featured as a research highlight for October 2024.
2020	3 articles (Malcolm et al., 2013; Lee et al., 2017; Kim et al., 2019) were listed among the 9 milestones of advancement in exoskeleton technology in a review by Sawicki et al. (2020).
2019	4 studies were cited in an editorial overview of previous 15 years of JNER (Reinkensmeyer et al., 2019). One article was listed in the top 10 of the most cited publications in 2017.
2018	Finalist selection for Clinical Translational Research Superstar grant writing competition
October 2013	Study of the week in literature update of International Society of Biomechanics
April 2013	Second study of the week in literature update of International Society of Biomechanics
2007	Young Investigator Award, International Society of Biomechanics, Study: A pneumatic ankle-foot-orthosis as a means to experimentally validate hypotheses about the role of the tibialis anterior in the walk-to-run transition.

Invited Presentations

2025 (scheduled) Western Nebraska Stroke Symposium

2024 Biomechanically inspired low-cost exosuits for gait rehab in rural stroke survivors. Nebraska Stroke Association.

2022 Wearable robots, inspired by and informing the biomechanics of walking. UNL Biomechanical Engineering seminar

2020 Wearable Robotic Conference "A robotic tether can assist more efficiently than a passive tether, but the optimal timing is counterintuitive." Virtual WeRob Madrid

2019 Using wearable robots to "feel" metabolic cost and provide simple timed assistance. UNMC Surgery Forum. Omaha

2019 Using wearable robots to "feel" metabolic cost and provide simple timed assistance. UNO Biomechanics Seminar Series, Omaha

2019 Assistive mechanisms of (distal) ankle exoskeletons and a (proximal) robotic waist tether. ASB symposium on exoskeletons and prostheses

2017 Human Exoskeleton Researchers Reddit AMA together with Dick, T., Ferris, D., Sawicki, G., Neugebauer, J., and Zelik, K. at American Society of Biomechanics.

2017 Exoskeleton actuation inspired by and informing biomechanics. UNO Biomechanics Seminar Series, Omaha

2017 Optimization of exoskeleton actuation: Comparison of results with exoskeletons and exosuits, AHFE, Los Angeles

2014 Optimization of a simple assistive exoskeleton through human biomechanics experiments Biodesign lab meeting, Harvard University, Cambridge

2014 Optimization of actuation and configuration of assistive devices for walking through human experiments, 7th World Congress of Biomechanics, Boston

2013 Effect of actuation and configuration of assistive devices. Lab visit, University of Michigan, Ann Arbor.

2013 Bipedal locomotion seminar. Carnegie Mellon University, Pittsburgh

2013 A simple exoskeleton can reduce the metabolic cost of walking. Dynamic Walking Conference, Carnegie Mellon University, Pittsburgh Video: www.youtube.com/watch?v=qXIfHBH4ry0#t=8656

2013 A simple pneumatically powered exoskeleton can reduce the metabolic cost of walking. High Tech Systems, Eindhoven

Grants

Current

2024-2025 NU Collaboration Initiative:
Low-cost exosuits for home-based constraint-induced therapy in rural stroke survivors.
Role: PI $97,000

2022-2025 NSF Collaborative Project:
Detecting the Walking Phases with Raised Oxygen Costs for Targeted Therapy.
Role: PI $238,743

2019-2025 NIH COBRE:
Exoskeleton optimization for reducing gait variability in patients with peripheral artery. disease.
Role: subproject lead $548,621 for subproject

Completed

2022-2023 NU Collaboration Initiative
At-home stroke rehabilitation using low-cost asymmetric exosuits.
Role: PI $40,000

2021-2022 NU Collaboration Initiative
Detecting the Walking Phases with Raised Oxygen Costs for Targeted Therapy
Role: PI $38,399

2020-2023 VA
Exoskeleton footwear to improve walking performance and subject-reported preference.
Role: Co-investigator $12,051 for own contribution

2018-2019 Nebraska / NSF EPSCOR
Dynamic Indirect Calorimetry.
Role: PI $50,000

2018-2019 University of Nebraska System Collaboration Initiative
Exoskeletons for mobility assistance.
Role: PI $8,500

2017 Industry consultancy grant: J Brasch Co. LLC
Gait-o-gram: differentiating fallers from non-fallers using nonlinear analysis.
Role: PI $64,480

2017 NASA Nebraska
Influence of foot-ground traction on gaits for reduced gravity.
Role: PI $24,092.

Committee Service

2022 - present Academic Standards and Policies, 2022 - Present

2021 - present UNMC adult IRB

2024 Search ccommittee chair: Research Associate Faculty

2019-2020 Search committee member: Assistant Professor

2017-2019 Committee member: Student affairs committee

2017-2018 Search committee member: Associate Professor

Conference Service

2025 (scheduled) Co-organizer Great Plains American Society of Biomechanics

2024 Co-organizer Great Plains American Society of Biomechanics

2021 Co-organizer Rocky Mountain American Society of Biomechanics

2019 Session co-chair at the American Society of Biomechanics

2018, 2019 Session chair at Rocky Mountain American Society of Biomechanics

2017-present Abstract reviewer service at several national and international conferences.

Journal Review Service

Performed 98 verified peer reviews including the following journals:
Science Robotics (IF 24), Biocybernetics and Biomedical Engineering (IF 5.4), Journal of NeuroEngineering and Rehabilitation (IF 4.5), Frontiers in Neuroscience (IF 4.5), Scientific Reports (IF 4.4), Journal of the Royal Society Interface (IF 4.1), IEEE Transactions on Neural Systems and Rehabilitation Engineering (IF 3.5), Journal of Applied Physiology (IF 3.5), Plos One (IF 3.2), European Journal of Applied Physiology (IF 3.1), IEEE International Conference on Intelligent Robots and Systems (IF 3), Royal Society Open Science (IF 2.9), Gait & Posture (IF 2.2), Robotica (IF 2), IEEE RAS/EMBS Int. Conf. on Biomedical Robotics and Biomechatronics, IEEE Robotics and Automation Letters.
Review service record available on https://publons.com/researcher/1217881/philippe-malcolm

Grant Review Service

2024 Performed grant reviews for NIH

2022-present Performed annual grant reviews for NSF

2017-present Performed grant reviews for Canadian and European funding agencies

Outreach

2024-2025	Yearly lecture series targeted for older adults on “Every step counts: health benefits of walking” at Osher Institute of Lifelong Learning
2024	Millard High School Science Fair: interactive passive dynamic pendulum walker demo
2017-present	National Biomechanics Day: Interactive games with EduExo exoskeleton.
2018 and 2024	Submission of tutorial to educational repository of the American Society of Biomechanics Using EduExo to visualize electromechanical delay in the m. biceps brachii.
2018, ‘19, ‘20	Nebraska Robotics expo
2015	Family Day of Discovery, Harvard University: Soft Exosuit demonstration
2014	Kids University Day, Ghent University: Lecture about biomechanical support of an elite high jump athlete
2009	Science Night, Ghent University: Biomechanical support of an elite high jump athlete
2004-2014	Ghent University: Yearly open-lab days for high-school students

Media

Covered by over 150 news outlets, including:
AAAS Newsletter, BBC, Boston Globe, EOS, Exoskeleton Report, Gizmodo, IEEE Soft Robotics podcast (scheduled for June), New Scientist, NPR Science Friday, Popular Mechanics, Reddit, Scientific American, The Economist, The Telegraph

5 articles were in the top 5 percentile of attention-score of all research (Source www.altmetric.com)

Examples of Media Releases:

2024	Using exoskeletons to demystify energy economy. HuMoTech podcast
2022	Communication video: UNO Research Discovers Surprising Way to Make Walking Easier https://www.youtube.com/watch?v=DwN3rBUIi6o
2022	NSF Funds Machine-Learning Research at UNO and UNL to Study Energy Requirements of Walking in Older Adults https://www.unomaha.edu/news/2022/07/nsf-metabolic-cost-study.php

Memberships

American Society of Biomechanics
International Society of Biomechanics
Wearable Robotics Association