**Philippe Malcolm** 5623 Emile Street, Omaha, NE 68106, USA

617 / 487 11 48 pmalcolm@unomaha.edu

**H-index: 24, 3400 citations**

https://scholar.google.be/citations?user=Q1XcsrUAAAAJ&hl=en&oi=sra

**Positions**

2023-present Associate Professor at the Department of Biomechanics and

Center for Research in Human Movement Variability
at the University of Nebraska at Omaha, Biomechanics Research Building

2017-present Assistant Professor at the Department of Biomechanics and

Center for Research in Human Movement Variability
at the University of Nebraska at Omaha, Biomechanics Research Building

Associated with Harvard University

John A. Paulson School of Engineering and Applied Sciences

and Wyss Institute for Biologically Inspired Engineering

Postdoctoral collaborator with Movement Science Lab at Ghent University

 Department of Movement and Sports Sciences

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 a project on [design and development
of a soft lower-extremity assistive device](http://biodesign.seas.harvard.edu/soft-exosuits)

Advisor: Walsh C. J.

Summer 2013 Visiting Scholar, [Carnegie Mellon University](http://biomechatronics.cit.cmu.edu/)

Department of Mechanical Engineering

Project: [The influence of push-off timing in a robotic ankle-foot prosthesis on the energetics and mechanics of walking](http://www.jneuroengrehab.com/content/12/1/21)

Advisor: Collins S. H.

2010-2014 Postdoctoral Assistant, Ghent University

 Department of Movement and Sports Sciences

[Laboratory of Movement Science](http://users.ugent.be/~ddclerc/WALL-X/)
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.](https://biblio.ugent.be/publication/1047392)

Advisor: De Clercq D., Committee: Seyfarth A., Van Leemputte M.,
Vanrenterghem J., D’Aout K., Witvrouw E., Derave W.

2002-2003 Second M.Sc., Academic Teaching Training, 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

2017- Present Undergraduate biomechanics

2017-2019 MATLAB for Movement Sciences

2017-2019 Guest lectures for Motor Control I

2013-2014 Honors program in movement science, 1st and 2nd year of kinesiology M.Sc.: advanced internship to prepare students for a job as sports scientist 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 on track and field, artistic gymnastics, and swimming.

2008-2011 Movement analysis of fitness training, 1st year of kinesiology M.Sc.: EMG and isokinetic measurement practicum

2004-2014 Sport-specific movement analysis, 1st year of kinesiology M.Sc.: demonstration of all measurement methods in sports biomechanics and hands-on projects of each student in his sports-coaching specialization

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**

Present Phd. advisor of Sangwon Shin

Present MSc. advisor of Hiva Razavi

2020-2023 PhD. advisor of Alex Dzewaltowski

2021-2022 MSc. advisor of K. Kowalczyk

2021-2022 MSc. advisor of S. Senatore

2018-present PhD. advisor of Gonabadi A. M.

2017-2020 Ph.D. advisor of Prokopios Antonellis

2017-2018 MSc. advisor of Cory Frederick

2015 Co-mentor of one design-engineering final project at Harvard University

2010-2015 Co-advisor Ph.D. Breine B.: Initial foot contact patterns in shod running, relationship with speed and impact intensity

2010-2015 Mentor Ph.D.: Galle S.: Ankle-foot exoskeletons, from experimental optimization to practical applications

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**

2023 UNO GRACA Sangwon Shin. $5000

2023 UNO GRACA Hiva Razavi. $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, **>350 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. 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
2. 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
3. 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

1. 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
2. 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
3. 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
4. Using human-in-the-loop optimization for guiding manual prosthesis adjustments: a proof-of-concept study. SC Senatore, KZ Takahashi, **P Malcolm**. Frontiers in Robotics and AI 10
5. 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.
6. 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.
7. 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.*
8. 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
9. 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).
10. 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.
11. 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.
12. 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
13. 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.
14. 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
15. 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
16. P Antonellis, S Galle, D De Clercq, **P Malcolm**, Altering gait variability with an ankle exoskeleton PloS one 13 (10), e0205088 2018.
17. 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
18. 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
19. 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 **+ 150 citations**
20. 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
21. 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
22. 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
23. 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
24. 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
25. 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.
26. 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
27. 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
28. 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
29. 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.
30. 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

**Awards**

2018 Finalist selection for Clinical Translational Research Superstar grant writing competition.

October 2013 Study of the week, literature update on mailing list sponsored by the International Society of Biomechanics

Study: [Adaptation to walking with an exoskeleton that assists ankle extension](http://www.gaitposture.com/article/S0966-6362%2813%2900116-1/abstract).

April 2013 Study of the week, literature update on mailing list sponsored by the International Society of Biomechanics

Study: [A simple exoskeleton that assists plantarflexion can reduce the metabolic cost of human walking](http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0056137).

2007 Young Investigator Award, International Society of Biomechanics,

XXIth Congress, Taipei

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](https://biblio.ugent.be/publication/412310/file/447686.pdf).

**Invited Presentations**

2024 Scottsbluff Stroke support group.

2022 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 Exoskeleton actuation inspired by and informing biomechanics, BRB 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](https://www.researchgate.net/publication/280653038_Optimization_of_Exoskeleton_Actuation_and_Configuration_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](http://www.cmu.edu/dynamic-walking/files/abstracts/Malcolm_2013_DW.pdf).
Dynamic Walking Conference, Carnegie Mellon University, Pittsburgh

Video: [www.youtube.com/watch?v=qXIfHBH4ry0#t=8656](http://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

2022 NSF Collaborative project:

Detecting the Walking Phases with Raised Oxygen Costs for Targeted Therapy

Role: PI $238,743

2021 NU Collaboration Initiative
Detecting the Walking Phases with Raised Oxygen Costs for Targeted Therapy

 Role: PI $38,399

2019 NIH COBRE
Exoskeleton optimization for reducing gait variability in patients with peripheral artery disease.

Role: subproject lead $548,621 for subproject

2020 VA
Exoskeleton footwear to improve walking performance and subject-reported preference.

 Role: Co-investigator $12,051 for own contribution

Completed

2018 Nebraska/NSF EPSCOR

Dynamic Indirect Calorimetry.

Role: PI $50,000

2018 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.

**University Committee Service**

2022 - present Academic Standards and Policies, 2022 - Present

2021 - present UNMC adult IRB, 2021 - Present

2019-2020 Assistant professor search committee, 2019 - 2020

2017-2019 Committee Member, Students activity committee, 2017 - 2019

2017-2018 Committee Member, Associate Professor search committee, 2017 - 2018

**Conference service**

2024 Co-organizer Great Plains American Society of Biomechanics

2021 Co-organizer Rocky Mountain American Society of Biomechanics

2021 Co-organizer Rocky Mountain American Society of Biomechanics

2019 Session co-chair at American Society of Biomechanics

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

**Referee service**

Performed over 100 manuscript reviews for:

Biocybernetics and Biomedical Engineering, European Journal of Applied Physiology, Frontiers in Neuroscience, Gait & Posture, IEEE International Conference on Intelligent Robots and Systems, IEEE International Conference on Rehabilitation Robotics, IEEE International Conference on Robotics and Automation, IEEE RAS/EMBS International Conference on Biomedical Robotics and Biomechatronics, IEEE Robotics and Automation Letters, IEEE Transactions on Biomedical Engineering, IEEE Transactions on Neural Systems and Rehabilitation Engineering, Journal of Applied Physiology

Journal of Biomechanics, Journal of Mechanical Design - Transactions of the ASME, Journal of NeuroEngineering and Rehabilitation, Journal of the Royal Society Interface, Plos One, Robotica

Royal Society Open Science, Science Robotics, Scientific Reports

Review service record available on <https://publons.com/researcher/1217881/philippe-malcolm>

2022-present Performed grant reviews NSF

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

**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

Source [www.altmetric.com](http://www.altmetric.com)

**Memberships**

International Society of Biomechanics

American Society of Biomechanics

American Association for the Advancement of Science

Wearable Robotics Association

Institute of Electrical and Electronics Engineers (IEEE)

**Outreach**

2020 Nebraska Robotics expo

2019 National biomechanics day and Nebraska Robotics expo

2018 National biomechanics day and Nebraska Robotics expo

2017 Reddit AMA on Exoskeletons

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