Pieter Van den Berghe

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Positions

2023-present Postdoctoral Fellow
Cardiovascular Research Laboratory in the Harvard Medical School
Department of Physical Medicine and Rehabilitation, Spaulding Rehabilitation

Postdoctoral collaborator with Rehabilitation in Chronic Internal Disorders Research Unit Ghent

2021- 2023 Research/lab technician at Ghent University
Department of Rehabilitation Sciences, campus UZ Gent

Postdoctoral collaborator with Biomechanics of Human Movement at Ghent University
Department of Movement and Sports Sciences, Sport Science Laboratory-Jacques Rogge

2022-present Social Media Editor of Journal of Sports Sciences

Education

2015-2021 Ph.D. in Health Sciences, Ghent University
Thesis: Motor retraining by real-time sonic feedback: understanding strategies of low impact running
Promotors: De Clercq D. and Segers V. (Kinesiology), and Leman M. (Musicology)
Committee: Gruber A., Maes PJ., Vanrenterghem J., Verloigne M., Aerts P.
Funded by the Research Foundation-Flanders (*aspirant fundamenteel onderzoek)*

2013-2015 M.Sc. in Physical Education and Movement Sciences (Kinesiology), Ghent University,
Elective courses in engineering: scientific programming, biosystems
1-month internships: training and test centres of Energy Lab, Gent; HIKO, Ninove, Belgium; and the professional sports club of VC Saint Cloud, Paris, France

2010 - 2013 B.Sc. in Physical Education and Movement Sciences (Kinesiology), Ghent University

Teaching

2016-2020 Biomechanics of Motor Skills, 2nd year 1st semester of kinesiology B.Sc.: practical exercises on 2D motion analysis in open source software and data analysis in Excel, including the grading of about 90 students a year.

2016-2019 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 program.

2017 Sport-specific movement analysis, 1st year 1st semester of kinesiology M.Sc.: introduction and demonstration of accelerometry as a measurement technique in sports biomechanics

Mentoring and Advising

2021 Mentored a Kinesiology Student Internship for Seattle University, online due to COVID-19

2020 Assistance in the writing of an application for an FWO short study visit abroad; granted but cancelled due to the COVID-19 pandemic

2019 Mentored an international Master student who was interested in movement sciences and transitioned to predoctoral research (Yumna Ali, affiliated with University of Verona)

2015-2020 Advisor of eight M.Sc. theses and honor program dissertations in kinesiology

Publications

My publications of the Original Research type have already been cited more than 100 times according to Google Scholar.

Peer reviewed manuscripts
* is equal contribution, ■ indicates Open Access

1. Malcolm P., Galle S., **Van den Berghe P.**, De Clercq D. Exoskeleton assistance symmetry matters: Unilateral assistance reduces metabolic cost, but relatively less than bilateral assistance. *J Neuroeng Rehabil* (IF 2021: 5.208, Q1 - 5/68 Rehabilitation), 2018, 15:1, 74. https://doi.org/10.1186/s12984-018-0381-z ■
2. **Van den Berghe, P.**, Six, J., Gerlo, J., Leman, M., & De Clercq, D. (2019). Validity and reliability of peak tibial accelerations as real-time measure of impact loading during over-ground rearfoot running at different speeds. *Journal of Biomechanics* (IF 2021: 2.789, 65/98 in JCR category Engineering, Biomedical), 86, 238–242. https://doi.org/10.1016/j.jbiomech.2019.01.039
3. Lorenzoni, V*., **Van den Berghe, P.***, Maes, P.-J., De Bie, T., De Clercq, D., & Leman, M. (2018). Design and validation of an auditory biofeedback system for modification of running parameters. *Journal on Multimodal User Interfaces* (IF 2021: 1.694, 20/24 in JCR category Computer Science, Cybernetics), 13(3):167–180. https://doi.org/10.1007/s12193-018-0283-1
4. **Van den Berghe, P**., Gosseries, M., Gerlo, J., Lenoir, M., Leman, M., & De Clercq, D. (2020). Change-point detection of peak tibial acceleration in overground running retraining. *Sensors* (IF 2021: 3.847, 19/64 in JCR category Instruments & Instrumentation), 20(6), 1720. https://doi.org/10.3390/s20061720 ■
5. **Van den Berghe, P.,** Lorenzoni, V., Derie, R., Six, J., Gerlo, J., Leman, M. and De Clercq, D. (2021). Music-based biofeedback to reduce tibial shock in over-ground running: a proof-of-concept study. *Scientific Reports* (IF 2021: 4.996, the 5th most-cited journal in the world in 2021), *11*(1), 4091. https://doi.org/10.1038/s41598-021-83538-w ■
6. **Van den Berghe, P.**, Derie, R., Bauwens, P., Gerlo, J., Segers, V., Leman, M., De Clercq, D. (2022). Reducing the peak tibial acceleration of running by music-based biofeedback: A quasi-randomized controlled trial. *Scandinavian Journal of Medicine & Science in Sports* (IF 2021: 4.645, Q1 - 14/87 in JCR category Sport Sciences). 32(4):698–709. https://doi.org/10.1111/sms.14123
7. **Van den Berghe, P.**, Warlop, L., Derie, R., Leman, M., De Clercq, D., Breine, B. (2022). Foot strike determines the center of pressure behavior and affects impact severity in heel-toe running. *Journal of Sports Sciences* (IF 2021: 3.943, 27/87 in JCR category Sport Sciences). Apr 3;40(7):808–20. https://doi.org/10.1080/02640414.2021.2019991
8. **Van den Berghe, P.**, Breine, B., Haeck, E., & De Clercq, D. (2022). One hundred marathons in 100 days: Unique biomechanical signature and the evolution of force characteristics and bone density. *Journal of Sport and Health Science* (IF 2021: 13.077, Q1 - 2/87 in JCR category Sport Sciences). 11:347–57. https://doi.org/10.1016/j.jshs.2021.03.009 ■

9. Derie, R., **Van den Berghe, P**., Gerlo, J., Bonnaerens, S., Van Caekenberghe, I., Fiers, P., De Clercq, D., Segers, V. Biomechanical adaptations following a music-based biofeedback gait retraining program to reduce tibial shock: a randomized controlled trial. *Scandinavian Journal of Medicine & Science in Sports* (IF 2021: 4.645, Q1 - 14/87 in JCR category Sport Sciences), 2022, 32:1142–52. https://doi.org/10.1111/sms.14162
10. Derie, R., Robberechts, P., **Van den Berghe, P.**, Gerlo, J., De Clercq, D., Segers, V., & Davis, J.Tibial Acceleration-Based Prediction of Maximal Vertical Loading Rate During Overground Running: A Machine Learning Approach. *Frontiers in Bioengineering and Biotechnology* (IF 2021: 6.064, Q1 - 16/73 in JCR category Multidisciplinary Sciences), 2020, 8. https://doi.org/10.3389/fbioe.2020.00033 ■
11. Robberechts, P., Derie, R., **Van den Berghe, P.**, Gerlo, J., De Clercq, D., Segers, V., & Davis, J. Predicting gait events from tibial acceleration in rearfoot running: a structured machine learning approach. *Gait & Posture* (IF 2021: 2.746, 48/87 in JCR category Sport Sciences), 2021, 116544. https://doi.org/10.1016/j.gaitpost.2020.10.035
12. **Van den Berghe, P.** (2022) Motor retraining by real-time sonic feedback: understanding strategies of low impact running. *British Journal of Sports Medicine* (IF 2021: 18.473, Q1 - 1/87 in JCR category Sport Sciences). 105750. https://doi.org/10.1136/bjsports-2022-105750.

Under peer review

- **Van den Berghe P.,** De Bock S., Breine B., Horvais N., Gruber A., Six J., Samozino P., Leman M., Morin JB., De Clercq D., Giandolini M. Peak tibial accelerations between foot strike patterns in level running: an independent investigation in different cohorts. Submitted to *Sports Biomechanics,* revised and resubmitted on Augustus 15 2023.
- **Van den Berghe P.***, Derie R.*, Gerlo J., Bonnaerens S., Fiers P. Van Caekenberghe I., De Clercq D., Segers V. Learning effects in over-ground gait retraining: A 6-month follow-up of a quasi-randomized controlled trial. Posted as a PrePrint in *SportRχiv* on August 14, 2023. https://doi.org/10.51224/SRXIV.314. Submitted to *Journal of Sports Sciences,* in Minor Revision.
- **Van den Berghe P.***, Pieters D.*, Steyaert A., Witvrouw E., Wezenbeek E. Shear wave elastography of human muscle: simple processing modalities affect results. Submitted to *Journal of Applied Physiology* on 5th September 2023*.*
- Neural correlates of bimanual grasping task in 3-9months old healthy infants: an fNIRS study. Nele De Bruyn*, **Pieter Van den Berghe***, Sarah Six, Silke Speeckaert, Chris Van den Broeck. Submitted to *European Academy of Childhood Disability proceedings* on 20th October 2023.
- Influence of Step Width on the Walking, Running, and Sprinting Biomechanics: A Systematic Review. Mei Q., Wang Y., Jiang H., Hollander K., **Van den Berghe P.**; Justin Fernandez; Yaodong Gu. Submitted to *Clinical Biomechanics* on 27th October 2023.

Invited book chapter

13. **Van den Berghe, P**. A primer on wearable technology for injury risk management in distance running. In: Individualizing Exercise and Training Procedures with Wearable Technologies–Addressing Common Problems of Athletes. P. Düking and B. Sperlich (Ed.). Springer Nature. In Press.

Patent

14. Provisional patent application: Low impact running. The invention relates to methods and systems which support a runner in gait retraining. Co-inventor, published on January 2nd 2020, application number PCT/EP2019/066738.

Awards

2023 Cross-Disciplinary PhD Award of the Belgian Industrial R&D group

2023 PhD Thesis Prize AY 2021-2022 of Faculty of Medicine and Health Sciences - Runner-up

2023 Fondation Fernand Lazard Stichting; interest-free loan to pursue research abroad

2021 FBS Innovation Award, Footwear Biomechanics Group

2021 Most Amazing Podium Presentation, Rocky Mountain American Society of Biomechanics

2019 Matching Dissertation Grant Program, International Society of Biomechanics

2018 PhD student congress competition winner of the American Society of Biomechanics

2017 PhD student competition podium place, VK Symposium (*Society for kinesiology*)

2015 Master of Science student competition - Gaston Beune laureate, VK Symposium

Student grant support

2024 Leadership Catalyst Research Fellowship, Harvard Medical School post-doctoral appointments offer mentoring and educational opportunities to foster continued development for the trainee to pursue rehabilitation research.

2023 Ghent University SIP Harvard - Brigham and Women's Hospital and Harvard Medical School Strategic Institutional Partnership; seed money grant

2023 Honorary Fellow of the Belgian American Educational Foundation (B.A.E.F)

2022 Finalist of the 2023 call by the VOCATIO foundation, an organization that has been helping passionate, innovative young people make their dreams a reality.

2021 Finalist selection for the D. W. Young Investigator Award poster competition, International Society of Biomechanics, the XXVIII Congress.
Study: Feedback-based running retraining for impact reduction : the relationship between peak tibial acceleration and step frequency.

2019 Student Travel Award for FBS2019, Footwear Biomechanics Group
Study: Consolidation of the atypical rearfoot strike pattern in distance runners and linkage to tibial shocks. Footwear Science, 11, sup1, S146-S147.

2018 Waiver fee for the World Congress of Biomechanics following a top-20 result in the European society of Biomechanics' student competition for WCB2018
Study: Resultant peak tibial acceleration is a measure of impact loading in overground rearfoot running : a validation and reliability study across speeds.

2018 Travel grant for a short research stay, FWO
Visited the Indiana University biomechanics lab, led by Dr. Allison Gruber, in July 2018

2016 Travel grant for educational purposes, Faculty Mobility Fund of Ghent University
Program: Biomechanics and Running retraining course, Pure Sports Medicine, London

Invited Presentations

2020-2021	Two invited talks at the University of Florida's undergraduate APK 4115: "Neuromuscular Aspects of Exercise" virtual course led by Dr. Diba Mani for a small group of students.
2020-2022	Journal club with Q&A at dept. of Biomechanics, University of Nebraska Omaha, USA; Human Movement Biomechanics Research Group, FaBeR, KU Leuven, Belgium; dept. of Human Movement Sciences, Vrije Universiteit Amsterdam, the Netherlands; Interuni. Lab. of Human Movement Science, Université Jean Monnet, France; dept. of kinesiology, Biomechanics Indiana University Bloomington, USA; Wearable Systems Lab, Shanghai Jiao Tong University, China.
2015	Concurrent training, Flemish Cycling Federation

Further training

2022, Jun. 8-10	UGent DS training program: data manipulation, analysis and visualisation in Python.
2022, April	Start Academy. A mentoring program in which individuals can shape their business idea.
2016, Feb.20-1	Pure Sports Medicine, London. Biomechanics and Running Retraining Course levels 1-2

Department Committee Service

2021-2023	Research Data Management workgroup
2019	Volunteer, winter sport stage of the Physical Education and movement sciences curriculum
2015-2019	Volunteer, yearly open lab-days of UGent's Sport Science Laboratory-Jacques Rogge

Referee service

Ad-hoc reviewer for:
Nature Scientific Reports, Plos One, Medicine & Science in Sports & Exercise, Scandinavian Journal of Medicine & Science in Sports, Journal of Sports Sciences, Journal of Science and Medicine in Sport, Journal of Biomechanics, Journal of Applied Biomechanics, Sports biomechanics, Biomedical Signal Processing and Control, Frontiers in Sports and Active Living, Footwear Biomechanics, BMJ Open Sport & Exercise Medicine, ISBS2021 proceedings, Medicine in Novel Technology and Devices.
Formal review service record available on publons.com/researcher/3689548/pieter-van-den-berghe/

Student memberships

International Society of Biomechanics
American Society of Biomechanics
European Society of Biomechanics
Footwear Biomechanics Group

Media and Outreach

Television	Team Scheire, episode 7 ("onderzoek helpt sporters om blessurevrij te lopen", Dutch)
Socials	VLIR thesis thread with more than 35.000 views on Twitter Science communication on X/Twitter via @PieterVeeDeeBee about sports sciences
Popularized articles	MDGP report for the International Society of Biomechanics, 3/2023 FWO's Kennismakers magazine (in Dutch), 2/2023 Lower Extremity Review, 4/2019, 5/2020; and Nano4Sports magazine

audiovisuals	Lightening talk, infographic, and video summary on various publications of the PhD
visuals	European Society of Biomechanics – music to one's ears, 3/2023

Specialized skills

Laboratory	Proficient in human motion and exercise measurements
Analysis	Scientific computing (Matlab, Python), statistics (JASP) and biomechanics (Visual3D) tools
Soft skill	Motivator, work and research ethics, open to feedback

Community service

2009 – 2014	Leader in the Boy Scouts (*Chiro*)

Languages

Dutch (●●●●●), English (●●●●○), French (●●●○○), German (●○○○○)