Luca Ruggiero

Alexander von Humboldt Postdoctoral Research Fellow

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Degrees

Jan 2016 – Feb 2019	Ph.D., Integrative Neuromuscular Physiology	University of British Columbia, Kelowna, CA.
Sep 2013 – Jul 2015	M.Sc. (Hons. 1st class), Biology of Physical Activity. Major: Biomechanics	University of Jyväskylä, FI
Sep 2009 – Jul 2012	B.Sc. (Hons. 1st class), Sport Sciences	University of Rome "Foro Italico", IT

Other education and expertise

Sep 2018 – Nov 2018	Project Management Training	University of British Columbia, Kelowna, CA
Sep 2017 – Nov 2017	Teacher Foundations Credentials	University of British Columbia, Kelowna, CA
Jan 2017	Certified Strength & Conditioning Specialist	National Strength & Conditioning Association, USA
Jun 2016	Sport Performance Coaching Certificate	Canadian Sport Institute, Victoria, CA

Language Skills

Italian: Native Language *English*: C2 *German*: B1

Current employment

Mar 2023 – present	Postdoctoral Researcher with an Alexander von Humboldt Research Fellowship, University of Konstanz, Konstanz, DE

Teaching Responsibilities

Oct 2023 – present	Teacher of the course "Neurophysiology of Human Movement and Performance", University of Konstanz, Konstanz, DE

Previous work experience

Nov 2019 – Nov 2022	Postdoctoral Researcher in Energetics of Locomotion, University of Milan, Milan, IT
May 2020 – Nov 2022	Sport Science Consultant – Italian National Volleyball Team (1 Olympic Game, 2 World and 1 European Championships; 1 Bronze and 2 Gold Medals)
Jan 2019 – Oct 2019	Self-employed – Strength and Conditioning Coach, Grosseto, Italy.
Jan 2016 – Nov 2018	Teaching Assistant (Muscle Physiology, Neurophysiology, Biomechanics), University of British Columbia, CA
Sep 2016 – Nov 2016	Research Member of the Expedition to Everest Base Camp
Sep 2012 – Jul 2013	Research Assistant in Biomechanics, University of Cumbria, Lancaster, UK

Research Grants and Awards

Total Funding: 304.878,00 €

Feb 2024	Outstanding Postdoctoral Researchers Funding, University of Konstanz (9.878,00 €)
Mar 2023 - present	Alexander von Humboldt Research Fellowship, 3 years. Personal Grant (250.000,00 €)
Jan 2016 – Jan 2019	University of British Columbia Graduate Fellowship, 3 years (39.000 €)
Nov 2018	University of British Columbia Ph.D. Thesis Award (6.000 €)

Publications
Number of Articles: 26; *Citations:* 171; *h-index*: 9 (*Source*: Scopus).

2024 [1]. (Invited Review) Ruggiero, L. & Gruber, M. (2024). Neuromuscular mechanisms for the fast decline in rate of force development with muscle disuse – a narrative review. ***Journal of Physiology*** (https://doi.org/10.1113/JP285667).

[2]. Luciano, F., Ruggiero, L., Minetti, A.E. & Pavei, G. (2024). Move Less, Spend More: the Metabolic Demands of Short Walking Bouts. ***Proceedings of the Royal Society B*** 291(2033): 20241220.

[3]. Twible, B., Ruggiero, L., McNeil, C.J. & Dalton, B. (2024). A Single Bout of On-ice Training Leads to Increased Inter-limb Asymmetry in Competitive Youth Hockey Athletes. ***Journal of Applied Biomechanics***, 19: 1-9.

[4]. Luciano, F., Ruggiero, L. (Shared First Authorship), Minetti, A.E. & Pavei, G. (2024). The work to swing limbs in humans versus chimpanzees and its relation to the metabolic cost of walking. ***Scientific Reports***, 14: 8970.

2023 [5]. Ruggiero, L. & McNeil, C.J. (2023). UBC-Nepal Expedition: Motor Unit Characteristics in Lowlanders Acclimatized to High Altitude and Sherpa. ***Medicine and Science in Sport and Exercise***, 55(3): 430-439.

2022 [6]. Ruggiero, L., Carpi, M. & Minetti, A.E. (2022). Rocker-profile Design Shoes Improve Pendular Energy Recovery in Walking with No Effects on Total Mechanical Work. ***Journal of Biomechanics***, 144: 111345.

[7]. Luciano, F., Ruggiero, L., Minetti, A.E. & Pavei, G. (2022). Comparison of Three-dimensional Body Centre of Mass Trajectories during Locomotion through Zero- and One-dimensional Statistics. ***Scientific Reports***, 12(1): 17777.

[8]. Ruggiero, L., Harrison, S.W.D., Rice, C.L. & McNeil, C.J. (2022). Neuromuscular Fatigability at High Altitude: Lowlanders with Acute and Chronic Exposure, and Native Highlanders. ***Acta Physiologica***, 234(4): e13788.

[9]. Ruggiero, L., Pritchard, S.E., Warmenhoven, J., Bruce, T., MacDonald, K., Klimstra, M. & McNeil, C.J. (2022). Volleyball Competition on Consecutive Days Modifies Jump Kinetics but not Height. ***International Journal of Sports Physiology and Performance***, 17(5): 711-719.

[10]. Minetti, A.E. & Ruggiero, L. (2022). Inertial Biometry from Commercial 3D body Meshes. ***Biology Open***, 11(3), bio058927.

[11]. Luciano, F., Cenacchi, V., Ruggiero, L. & Pavei, G. (2022). From the Lab to Real Life: Monitoring Cardiorespiratory Fitness during the COVID-19 Pandemic with Wearable Devices. Exploratory Longitudinal Study on Healthy Participants. ***Healthcare***, 10(4): 634.

[12]. Luciano, F., Pavei, G. & Ruggiero, L. (2022). Bariatric Surgery on Obese Walking: Mass(ive) Changes Akin to Load Carrying and Hypogravity for Normal-weight Adults. ***Journal of Physiology***, 600(4): 729-731.

2021 [13]. Luciano, F., Pavei, G. & Ruggiero, L. (2021). Commentaries on Viewpoint: A (Baker's) Dozen Tips for Enhancing Early-stage Academic Career Development in Biomedical Research. ***Journal of Applied Physiology***, 131(5): 1516-1519.

[14]. Luciano, F., Ruggiero, L. & Pavei, G. (2021). Sample Size Estimation in Locomotion Kinematics and Electromyography for Statistical Parametric Mapping. ***Journal of Biomechanics***, 122: 110481.

[15]. Ruggiero, L., Bruce, C.D., Streight, H.B. & McNeil, C.J. (2021). Maximal Results with Minimal Stimuli: the Fewest High-frequency Pulses Needed to Measure or Model Prolonged Low-frequency Force Depression in the Dorsiflexors. ***Journal of Applied Physiology***, 131: 716-728.

[16]. Bruce, C.D., Ruggiero, L., Dix, G.U., Cotton, P.D. & McNeil, C.J. (2021). Females and Males Do Not Differ for Fatigability, Muscle Damage and Magnitude of Repeated Bout Effect Following Maximal Eccentric Contractions. ***Applied Physiology, Nutrition and Metabolism***, 46(3): 238-246.

2020 [17]. Kulmala, J-P, Korhonen, M.T., Ruggiero, L., Kuitunen, S., Suominen, H., Heinonen, A., Mikkola, A. & Avela, J. (2020). Ankle and Knee Extensor Muscle Effort during Locomotion in Young and Older Athletes: Implications for Understanding Age-related Locomotor Decline. ***Scientific Reports***, 10(1): 2801.

[18]. Ruggiero, L., Hoiland, R.L., Hansen, A.B., Ainslie, P.N. & McNeil, C.J. (2020). High-altitude Acclimatization Improves Recovery from Muscle Fatigue. ***Medicine and Science in Sports and Exercise***, 52(1): 161-169.

2019 [19]. Ruggiero, L. & McNeil, C.J. (2019). Supraspinal Fatigue and Neural-evoked Responses in Lowlanders and Sherpa at 5050 m. ***Medicine and Science in Sports and Exercise***, 51(1): 183-192.

[20]. Ruggiero, L., Bruce, C., Cotton, P.D., Dix, G.U., & McNeil, C.J. (2019). Prolonged Low-frequency Force Depression is Underestimated When Assessed with Doublets Compared with Tetani in the Dorsiflexors. ***Journal of Applied Physiology***, 126(5): 1352-1359.

2018 [21]. Bruce, C.D., Yacyshyn, A.F., Ruggiero, L. (2018). Sex Differences in Diaphragmatic Fatigue and the Metaboreflex following Inspiratory Pressure-threshold Loading. ***Journal of Physiology***, 596(19), 4579-4580.

[22]. Ruggiero, L., Yacyshyn, A.F., Nettleton, J. & McNeil, C.J. (2018). Reply to the Letter to the Editor. ***Journal of Physiology***, 596(15): 3427.

[23]. Ruggiero, L., Yacyshyn, A.F., Nettleton, J. & McNeil, C.J. (2018). UBC-Nepal Expedition: Acclimatization to High-altitude Increases Spinal Motoneurone Excitability during Fatigue in Humans. ***Journal of Physiology***, 596(15): 3327-3339.

[24]. Ruggiero, L., Hoiland, R.L., Hansen, A.B., Ainslie, P.N. & McNeil, C.J. (2018). UBC-Nepal Expedition: Peripheral Fatigue Recovers Faster in Sherpa than Lowlanders at High Altitude. ***Journal of Physiology***, 596(22): 5365-5377.

2016 [25]. Kulmala, J-P, Korhonen, M.T., Ruggiero, L., Kuitunen, S., Suominen, H., Heinonen, A., Mikkola, A. & Avela, J. (2016). Walking and Running Require Greater Effort from the Ankle than the Knee Extensor Muscles. ***Medicine and Science in Sports and Exercise***, 48(11): 2181-2189.

[26]. Ruggiero, L., Dewhurst, S. & Bampouras, T. (2016). Validity and Reliabiliity of Two Field-based Leg Stiffness Devices. ***Journal of Applied Biomechanics***, 32(4), 415-419.

Research Supervision

Member of the PhD Committee for 1 Doctoral Student.
Supervisor of 4 MSc and 3 BSc students, and of 3 Research Assistants

Awards and Recognitions

Apr 2024 Acta Physiologica, Top 10 Most-cited Article in the Years 2022-2023 (Link)
Apr 2021 Alexander von Humboldt Research Fellowship
May 2019 Selected by Journal of Physiology for the Best Paper Collection for the American College of Sports Medicine and European College of Sport Science Annual Congresses in 2019 (Link)

Nov 2018 Journal of Physiology, Editor's Choice Article. Highlighted also by a Journal Club Article (Link)
Aug 2018 Journal of Physiology, Editor's Choice Article. Highlighted also by a Perspective Article (Link)
Sep 2017 University of British Columbia Ph.D. Thesis Award
Jun 2017 American College of Sports Medicine Neurophysiology Abstract Winner
Jun 2017 University of British Columbia Travel Grant
May 2015 Vrije Universiteit Amsterdam Summer School Grant Award
Nov 2014 University of Jyväskylä International Student Award

Invited Articles, Lectures and Presentations

Articles

Jul 2024 Invited Review – Journal of Physiology – Neuromuscular Factors for the Decline of Explosive Force with Muscle Disuse.

Oral

Jul 2024 Chair and Invited Speaker – Annual Congress of the European College of Sport Science (Glasgow, UK) – Chair of the Invited Symposium: "Explosive performance: lessons from the animal kingdom, from new testing paradigms, and from space" – Talk Title: "Explosive Strength: what we can learn from the high performance of animals"
Jun 2024 Invited Speaker – Department of Sport Science, University of Freiburg (Freiburg, DE) – Fast movements in humans and animals: from neuronal cells to whole organisms
Apr 2024 Invited Speaker - Max Planck Institute of Animal Behaviour Seminar Series (Konstanz, DE) – Boom! The neuromechanics of explosive movements: from tiny animals to giants
Apr 2024 Invited Speaker - Biological Institute, University of Ljubliana (Ljubljana, SL) – Moving fast: neural mechanisms and scaling in Nature
Jul 2023 Invited Speaker – Schulthess Klinik (Zürich, CH) – Neural mechanisms at high altitude underpinning muscle fatigue: learning from an extreme environment
Dec 2020 Invited Speaker – University of Queensland (Brisbane, AU) – Muscle fatigue at high altitude
Jul 2018 World Congress of Biomechanics (Dublin, IE) – Jump Height is Maintained through Modifications in Jump Strategy during Simulated In-season Volleyball Competition
Mar 2018 Cardiovascular and Respiratory Symposium (Silver Star, CA) – Acclimatization to High-altitude Attenuates Muscle Fatigue Induced by Electrically-evoked Contractions
Jul 2017 European College of Sport Science Annual Meeting (Essen, DE) – Peripheral Fatigue Recovers Faster in Sherpa than Lowlanders at High Altitude
Apr 2013 British Association of Sport and Exercise Science Annual Conference (Cardiff, UK) – Validity, Reliability and Sensitivity of Two Leg Stiffness Measurement Devices

Poster

Jun 2024 Motoneuron Meeting (Bordeaux, FR) – Increased rate of force development after TMS-induced silent period.
Jun 2018 Motoneuron Meeting (Boulder, USA) – Ascent to High-altitude Increases Motor Unit Discharge Rates but Does Not Affect Force Steadiness.
Jun 2017 American College of Sports Medicine Annual Meeting (Denver, USA) – Acute Hypoxia Exacerbates Central Fatigue but Not the Fatigue-related Reduction in Motor neurons Responsiveness.
Mar 2017 International Hypoxia Symposium (Lake Louise, CA) – Central Fatigue Does Not Differ Between Lowlanders and Sherpa at High Altitude.

Scientific and Societal Impact, and Media Interest

Scientific Service

Review Editor for the Journal "Frontiers in Physiology" and "Frontiers in Sports and Active Living".

Reviewer for the following Journals (number of articles reviewed): Medicine & Science in Sports & Exercise (3), Journal of Physiology (3), Journal of Biomechanics (2), Journal of Applied Physiology (2), European Journal of Applied Physiology (3), Experimental Physiology (2), Exercise & Sport Sciences Reviews (1), Frontiers in Physiology (1), International Journal of Sport Science & Performance (1), PLosOne (1), Brain Sciences (1), Pediatric Exercise Science (1), Scientific Reports (1), Human Movement Science (1), Scandinavian Journal of Medicine and Science in Sports (3), Sport Science for Health (1).

Societal Impact

Oct 2024 Invited Speaker – Humboldt Hackathon 2024 (Berlin, DE) – "Mobilizing diverse minds across the globe"

Aug 2024 Article for teenagers in "**Frontiers for Young Minds**".
Ruggiero, L., Luciano, F., Gruber, M. & Clemente, C. (2024). Tiny Grasshoppers Have a Secret for Their Giant Jumps. Could Humans Use the Same Trick? (Link)

Mar 2017 Speaker in 3 Public Events to Present the Findings of the Nepal Research Expedition to High Altitude – Kelowna, Canada

Media Interest

Oct 2024 Gazzetta dello Sport (Sports Magazine, IT) – "Bruciare più calorie con le…micropasseggiate: tutti I vantaggi delle camminate brevi" (Link)

Oct 2024 The Guardian (Magazine, UK) – "Strolls with stops use more energy than continuous walking, scientists show" (Link)

Oct 2024 The Times (Magazine, UK) – "Ten-second micro-walks may lead to better health" (Link)

Oct 2024 Yahoo!life (Webpage, UK) – "10-second micro-walks can burn a surprising amount of calories, study finds" (Link)

May 2024 The Mirror (Magazine, UK) – "Help strangers become friends – The Europe Talk Project" (Link)

Nov 2018 The Squamish Chief (Magazine, CA) – "UBC Researchers Study Resilience of Sherpa Muscle Tissue" (Link)

Sep 2018 Castanet.net (Online News, Canada) – "Are You Fitter than a Sherpa?" (Link)

Sep 2018 Kelowna Capital News (Newspaper, CA) – "Are You Fitter than a Sherpa?" (Link)

Sep 2018 University of British Columbia News – "Lowlanders are no match for Nepal's Sherpa" (Link)