

MATTEO BERTUCCO

Curriculum Vitae

Department of Neuroscience, Biomedicine and Movement Sciences

University of Verona

Via Felice Casorati 43, 37131 Verona, Italy

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Email: matteo.bertuccio@univr.it

Education

Ph.D. University of Verona, Italy
Physical Exercise and Human Movement Sciences, 2010

M.S. University of Verona, Italy
Preventative and Adapted Motor Activity Sciences, 2006

B.S. University of Verona, Italy
Human Movement and Sport Sciences, 2003

Present position

2019-present
Associate Professor University of Verona

Appointments

2017-2019
Assistant Professor University of Verona

2018 (February– May)
Visiting Professor Northwestern University and AbilityLab

2017 (March – May)
Visiting Professor University of Harford

2016
Assistant Professor University of Harford

2010 - 2016
Postdoctoral Research Associate University of Southern California

Current Areas of Research

Motor control, motor learning, biomechanics, postural control, locomotion, neurorehabilitation, pediatric movement science, movement disorders.

Publications

Peer-Reviewed Journal Papers

1. Piras A, **Bertuccio M**, Del Santo F, Meoni A, Raffi M. (2024). Postural stability assessment in expert versus amateur basketball players during optic flow stimulation. *J Electromyogr Kinesiol.* 2024; 74, 102855.
2. Pascucci F, Cesari P, **Bertuccio M**, Latash ML. Postural adjustments to self-triggered perturbations under conditions of changes in body orientation. *Exp Brain Res.* 2023; 241(8), 2163–2177.
3. Tam E, Nardon M, **Bertuccio M**, Capelli C. The mechanisms underpinning the slow component of VO₂ in humans. *Eur J Appl Physiol.* 2023; 0123456789. *Online ahead of print* 2/3/2024 11:02:00 AM
4. Martini E, Boldo M, Aldegheri S, De Marchi M, Vale N, Filippetti M, Smania N, **Bertuccio M**, Picelli A, Bombieri N. Real-time Human Pose Estimation at the Edge for Gait Analysis at a Distance. In: 2022 18th International Conference on Distributed Computing in Sensor Systems (DCOSS), pp 45–48.
5. Martini E, Boldo M, Aldegheri S, Vale N, Filippetti M, Smania N, **Bertuccio M**, Picelli A, Bombieri N. Preserving Data Privacy and Accuracy of Human Pose Estimation Software Based on CNN s for Remote Gait Analysis. In: 2022 44th Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC), pp 3468–3471.
6. Nardon M, Venturelli M, Ruzzante F, Longo V, **Bertuccio M**. Response to: Dealing with menstrual cycle in sport: stop finding excuses to exclude women from research. *Eur J Appl Physiol.* 2022; 122:2491–2492.
7. **Bertuccio M**, Nardon M, Mueske N, Sandhu S, Rethlefsen SA, Wren TAL, Sanger TD. The Effects of Prolonged Vibrotactile EMG-Based Biofeedback on Ankle Joint Range of Motion During Gait in Children with Spastic Cerebral Palsy: A Case Series. *Phys Occup Ther Pediatr*, 2002; 0:1–16. <https://doi.org/10.1080/01942638.2022.2151391>.
8. Martini E, Boldo M, Aldegheri S, Valè N, Filippetti M, Smania N, **Bertuccio M**, Picelli A, Bombieri N. Enabling Gait Analysis in the Telemedicine Practice through Portable and Accurate 3D Human Pose Estimation. *Comput Methods Programs Biomed.* 2022; 225:107016.
9. Nardon M, Pascucci F, Cesari P, **Bertuccio M**, Latash ML. Synergies Stabilizing Vertical Posture in Spaces of Control Variables. *Neuroscience.* 2022; 500:79–94.
10. Cesari P, Piscitelli F, Pascucci F, **Bertuccio M**. Postural Threat Influences the Coupling Between Anticipatory and Compensatory Postural Adjustments in Response to an External Perturbation. *Neuroscience.* 2022; 490:25–35.

11. Zandonai T*, **Bertuccio M***, Graziani N, Montani V, Cesari P (2022) Transcranial direct current stimulation (tDCS) modulates motor execution in a limb reaching task. *Eur J Neurosci.* 2022; 56:4445–4454. *Equal contribution
12. Nardon M, Venturelli M, Ruzzante F, Longo VD, **Bertuccio M.** Fasting-Mimicking-Diet does not reduce skeletal muscle function in healthy young adults: a randomized control trial. *Eur J Appl Physiol.* 2022; 122(3): 651-661.
13. Nardon M, Ruzzante F, O'Donnell L, Adami A, Dayanidhi S, **Bertuccio M.** Energetics of walking in individuals with cerebral palsy and typical development, across severity and age: A systematic review and meta-analysis. *Gait & Posture.* 2021; 90:388–407.
14. Monte A*, **Bertuccio M***, Magris R, Zamparo P. Muscle Belly Gearing Positively Affects the Force–Velocity and Power–Velocity Relationships During Explosive Dynamic Contractions. *Front Physiol.* 2021;12:683931. *Equal contribution
15. Nardello F, **Bertuccio M**, Cesari P. Anticipatory and pre-planned actions: A comparison between young soccer players and swimmers. *PLoS One.* 2021;16(4):e0249635.
16. Borish CN*, **Bertuccio M***, Berger DJ, D'Avella A, Sanger TD. Can spatial filtering separate voluntary and involuntary components in children with dyskinetic cerebral palsy? *PLoS One.* 2021;16(4):e0250001. *Equal contribution
17. **Bertuccio M**, Nardello F, Magris R, Cesari P, Latash ML. Postural Adjustments during Interactions with an Active Partner. *Neuroscience.* 2021;463:14-29.
18. Nardello N, Bertoli E, Bombieri F, **Bertuccio M**, Monte A. The Effect of a Secondary Task on Kinematics during Turning in Parkinson's Disease with Mild to Moderate Impairment, Symmetry (Basel). 2020; 12: 1284.
19. **Bertuccio M**, Dunning A, Sanger TD. Tuning of Standing Postural Responses to Instability and Cost Function. *Neuroscience.* 2020; 428; 100–110.
20. Borish CN, **Bertuccio M**, Sanger TD. Effect of target distance on controllability for myocontrol. *Int. J. Hum. Comput. Stud.* 140 (2020) 102432.
21. **Bertuccio M**, Lunardini F, Nardon M, Casellato C, Pedrocchi A, Sanger TD. Vibro-tactile EMG-based biofeedback induces changes of muscle activity patterns in childhood dystonia. 9th Int. IEEE/EMBS Conf. Neural Eng., IEEE, 2019: 53–56.
22. **Bertuccio M**, Sanger TD. A model to estimate the optimal layout for assistive communication touchscreen devices in children with dyskinetic cerebral palsy. *IEEE Trans Neural Syst Rehabil Eng.* 2018; 26(7):1371-1380.
23. Borish CN, Feinman A, **Bertuccio M**, Ramsy NG, Sanger TD. Comparison of speed-accuracy tradeoff between linear and non-linear filtering algorithms for myocontrol. *J Neurophysiol.* 2018; 119(6): 2030-2035.
24. Veneri D, Gannotti M, **Bertuccio M**, Fournier Hillman SE. Using the ICF model to gain perspective of the benefits of yoga in stroke, MS and children to inform practice for children with CP: A meta-analysis". *J Alternat Compl Med.* 2018; 24(5): 439:457.
25. Lunardini F, Casellato C, **Bertuccio M**, Sanger TD, and Pedrocchi A. Children With and Without Dystonia Share Common Muscle Synergies While Performing Writing Tasks. *Ann Biomed Eng.* 2017; 45(8):1949-1962.

26. Liyanagamage SA, **Bertuccio M**, Bhanpuri NH, Sanger TD. Scaled vibratory feedback can bias muscle use in children with dystonia without changing overall performance in a redundant one-dimensional myocontrol task. *J Child Neurol*. 2017;32:161-169
27. Lunardini F, Casellato C, **Bertuccio M**, Sanger TD, Pedrocchi A. Muscle synergies in children with dystonia capture healthy patterns regardless the altered motor performance. *Conf Proc IEEE Eng Med Biol Soc* 2015. 2015; 2099-2102.
28. **Bertuccio M**, Bhanpuri NH, Sanger TD. Perceived Cost and Intrinsic Motor Variability Modulate the Speed-Accuracy Trade-Off. *PLoS One*. 2015;10(10): e0139988.
29. Lunardini F, Maggioni S, Casellato C, **Bertuccio M**, Pedrocchi A, Sanger TD. Increased task-irrelevant components of muscle activity in childhood dystonia. *J Neuroeng Rehabil*. 2015; 12: 52.
30. Lunardini F, **Bertuccio M**, Casellato C, Bhanpuri NH, Pedrocchi A, Sanger TD. Speed-accuracy trade-off in a trajectory-constrained self-feeding task: a quantitative index of unsuppressed motor noise in children with dystonia. *J Child Neurol*. 2015;30(12):1676-85.
31. Dunning A, Ghoreyshi A, **Bertuccio M**, Sanger TD. The Tuning of Human Motor Response to Risk in a Dynamic Environment Task. *PLoS One*. 2015;10(4):e0125461.
32. Bhanpuri NH, **Bertuccio M**, Young SJ, Lee A, Sanger TD. Multiday transcranial direct current stimulation causes clinically insignificant changes in childhood dystonia: A pilot study. *J Child Neurol*. 2015; 30(12): 1604-15.
33. **Bertuccio M**, Sanger TD. Current and emerging strategies for childhood dystonia. *Journal of Hand Therapy*. 2015; 28(2):185-93.
34. **Bertuccio M**, Dayanidhi S. Can the period of postnatal co-development of the rubrospinal and corticospinal systems provide new insights into refinement of limb movement? *J Neurophysiol*. 2015; 113: 681–683.
35. Bhanpuri NH*, **Bertuccio M***, Ferman D, Young SJ, Liker MA, Krieger MD, Sanger TD. Deep brain stimulation evoked potentials may relate to clinical benefit in childhood dystonia. *Brain Stimulation*. *Equal contribution. *Brain Stimul*. 2014; 7(5): 718-726.
36. Milanese C, **Bertuccio M**, Zancanaro C. The effects of three different rear knee angles on kinematics and kinetics in sprint start. *Biology of Sport*. 2014; 31: 209-215.
37. Casellato C, Maggioni S, Lunardini F, **Bertuccio M**, Pedrocchi A, Sanger TD. Dystonia: Altered Sensorimotor Control and Vibro-tactile EMG-Based Biofeedback Effects. XIII Mediterranean Conference on Medical and Biological Engineering and Computing 2013. *IFMBE Proceedings*. 2014; 41: 1742-1746.
38. Young SJ, **Bertuccio M**, Sanger TD. Cathodal transcranial direct current stimulation in children with dystonia: a sham-controlled study. *J Child Neurol*. 2014; 29(2): 232-239.
39. **Bertuccio M**, Sanger TD. Speed-accuracy testing on the Apple iPad® provides a quantitative test of upper extremity motor performance in children with dystonia. *J Child Neurol*. 2014; 29:1460-1466.
40. **Bertuccio M**, Cesari P, Latash ML. Fitts' Law in early postural adjustments. *Neuroscience*. 2013; 213: 61-69.

41. Young SJ, **Bertuccio M**, Sheehan-Stross R, Sanger TD. Cathodal transcranial direct current stimulation in children with dystonia: a pilot open-label trial. *J Child Neurol*. 2013; 28(10): 1238-1234.
42. **Bertuccio M**, Cesari P. Does movement planning follow Fitts' law? Scaling anticipatory postural adjustments with movement speed and accuracy. *Neuroscience*. 2010; 171(1): 205-213.
43. Milanese C, Bortolami O, **Bertuccio M**, Verlato G, Zancanaro C. Anthropometry and motor fitness in children aged 6-12 years. *Journal of Human Sport and Exercise*. 2010; 5(2) 265-279.
44. **Bertuccio M**, Cesari P. Dimensional analysis and ground reaction forces for stair climbing: effects of age and task difficulty. *Gait and Posture*. 2009; 29(2): 326-331.
45. Cesari P, **Bertuccio M**. Coupling between punch efficacy and body stability for elite karate. *Journal of Science and Medicine in Sport*. 2008; 11(3): 353-356.

Teaching

“Biomechanics of human movement”

Master's degree in Preventive and Adapted Exercise Science (since 2016)

“Motor learning and skill acquisition in sport” (*within the course “Exercise and training programs”*)

Master's degree in Sport Science and Physical Performance (since 2016)

“Motor development” (*within the course “Physical activity and development”*)

Bachelor's Degree in Sport and Exercise Science (Since 2019)

“Motor control and learning”

Bachelor's Degree in Sport and Exercise Science (Since 2021)

Grants, Awards, Scholarships

2023

1. PRIN 2022 (Progetti di Rilevante Interesse Nazionale). €280798

2019

2. Brain Research Foundation Verona ONLUS. €7000

2018

3. UBI Banca. €5000
4. Create Cures Foundation. €6000

2017

5. Create Cures Foundation. €6000
6. CooperInt outgoing visiting funding by the University of Verona. \$ 4400.

2016

7. Emerging Researcher Travel Award. ISAAC Conference 2016.

2015

8. USC Postdoc Association travel award.

2014

9. California Community Foundation. “The effects of augmented sensory feedback through electromyogram-based devices to improve selective motor control during gait in children with cerebral palsy”. \$50000. Co-Principal Investigator.
10. Southern California Clinical and Translational Science Institute. “Augmented sensory feedback to improve selective motor control during gait in children with cerebral palsy”. Research Pilot Funding Award. \$27000. Co-Principal Investigator.
11. ISSNAF Awards 2014. Finalist selected.

2013

12. USC Postdoc Association travel award.

2008

13. Research Visiting Scholar Sponsor Funds. Pennsylvania State University. \$2917
14. Young Researchers Award for Poster Presentation”. 5th Scientific Conference on Kinesiology in Zagreb, Croatia, September 10th- 14th, 2008.

2007

15. Scholarship “CooperInt Ateneo 2007” for Junior Researchers Mobility by the University of Verona. \$ 7400.

2005

16. Erasmus project scholarship, University of Verona, Italy. \$2000.

Invited Seminars

1. Department of Kinesiology, University of Rhode Island, October 26th, 2023.
2. Centro Neurolesi Bonino Pulejo Messina, IRCCS, June 26th, 2023
3. Department of Kinesiology, University of Rhode Island, March 5th, 2018.
4. Rehabilitation Institute of Chicago (RIC), Chicago, USA, May 16th, 2016.
5. Center for Mind/Brain Sciences (CIMEC), University of Trento, Trento, Italy. July 29th, 2015.
6. Department of Exercise Science, University of South Carolina, Columbia, SC, USA, April 17th, 2015.
7. Physical Therapy Program, School of Medicine, Washington University in St. Louis, St. Louis, MO, USA, February 24th, 2015.
8. School of Biological and Health Systems Engineering, Arizona State University, Tempe, AZ, USA, February 16th, 2015.
9. Department of Kinesiology and Community Health, University of Illinois at Urbana-Champaign, Urbana-Champaign, IL, USA, January 22nd, 2015.
10. Children’s Hospital of Los Angeles, Los Angeles, CA, USA, August 26th, 2014.
11. Department of Kinesiology, Michigan State University, East Lansing, USA, January 15th, 2014.

12. Department of Neurosciences, Biomedicine and Movement Sciences, University of Verona, Italy, June 5th, 2013.
13. Department of Neurosciences, Biomedicine and Movement Sciences, Italy, May 15th, 2012.
14. Division of Biokinesiology and Physical Therapy, University of Southern California, Los Angeles, USA, February 18th, 2011.
15. Faculties of Human Movement and Sport Sciences & Medicine and Surgery, University of Verona, Italy, March 6th, 2010.
16. Rehabilitation Institute of Chicago (RIC), Chicago, USA, February 13th, 2010.

Collaborations

- Mark L. Latash, Pennsylvania State University
- Tarkeshwar Sing, Pennsylvania State University
- Sudarshan Dayanidhi, Northwestern University
- Francisco Valero-Cuevas, University of Southern California
- Alaa A. Ahmed, University of Colorado Boulder
- Alessandra Adami, University of Rhode Island
- Valter Longo, University of Southern California
- Andrea D'Avella, University of Rome Tor Vergata
- Alessandro Piras, University of Bologna
- Cristiano Alessandro, University of Milan Bicocca

Reviewer:

- Frontiers in Human Neuroscience
- Gait and Posture
- Human Movement Science
- Journal of Child Neurology
- Journal of Sports Sciences
- Journal of Neurophysiology

Affiliations to Scientific Societies

- Society for the Neural Control of Movement
- International Society of Motor Control
- Società Italiana delle Scienze Motorie e Sportive

Licenses

2022

1. Parachuting license (ENAC)

2007

2. Karate instructor, black belt 5th Dan, FESIK (Italian Federation of Sportive Karate)
- 2001
3. Swimming coach 2nd level, FIN (Italian Federation of Swimming)
- 1999
4. Certificate of Military Parachutist, Italian Army

Interests and Activities

- Sports: Karate, Boxing Cycling, Running, Table Tennis
- Wilderness: Hiking, Climbing
- Culture: Concerts, Museums, Movies, Reading, Food, Wine and Beer Tasting.

Military service

- 1st Regiment Carabinieri "Tuscania"

Principal Karate Competitive Awards

2009

1. 1st place, World Championships 2009 WUKO, Guadalajara, Mexico Individual competition.
2. 1st place, World Championships 2009 WUKO, Guadalajara, Mexico Team competition.

2007

3. 1st place, World Championships 2007 WUKO, Valencia, Spain Team competition.

2006

4. 1st place, European Championships 2006 WUKO, St. Polten, Austria Team competition.
5. 3rd place, European Championships 2006 WUKO, St. Polten, Austria Individual competition.

2005

6. 2nd place, World Championships 2005 WKC, Fortaleza, Brazil Individual competition.

Won more than 100 awards in International and National competitions.

Verona February 3, 2024

