
Given Name: Cristiano

Last Name: De Marchis

Birthplace: Roma, Italia

Birth date: November 2nd, 1984

Citizenship: Italian

Personal contacts: cristiano.demarchis@unime.it

Education and Training:

2010 - 2013: PhD in Bioengineering, Department of Applied Electronics, Doctoral School in Engineering, section of Biomedical Electronics, Electromagnetism and Telecommunications, University Roma Tre. Thesis title: "Neuromechanics of human movement: processing techniques and computational models for an integrated view of motor behavior".

July 2011: Visiting Student, Instituto de Biomechanica de Valencia

2007-2009: Master's Degree in Electronics Engineering, University Roma Tre. Thesis Title: "Myoelectric signal processing techniques for the detection and characterization of muscular tremor". Mark: 110/110 cum Laude

2003-2006: Bachelor Degree in Electronics Engineering, University Roma Tre. Thesis Title: "Project of slow light devices in 2-dimensional photonic crystal". Mark: 110/110

1998-2003: High School Scientific Diploma. School J.F. Kennedy of Rome. Mark: 100/100

Academic appointments:

2022-today: Senior Assistant Professor in Bioengineering (RTD-B, s.c. 09/G2, s.s.d. ING-INF/06) Department of Engineering, University of Messina

2017-2021: Assistant Professor in Bioengineering (RTD-A, s.c. 09/G2, s.s.d. ING-INF/06) Department of Engineering, University Roma Tre

April – September 2014: Visiting Researcher - Neuroprosthetics research group, Werner Reichardt Institute for Integrative Neuroscience, Eberhard Karls Universitat Tubingen, Tubingen, Germany. Responsible: Prof. Dr. Alireza Gharabaghi

2013 - 2017: Post-doc research fellow in Bioengineering, Department of Engineering, University Roma Tre

Participation and responsibility for national and international projects:

1. EU-FP7 program FP7-ICT-2007-2 #224051: “TREMOR—An ambulatory BCI-driven tremor suppression system based on functional electrical stimulation” (2008-2011). *Role:* participant

2. PRIN 2009 - Italian Ministry of Higher Education and Research - Programma di Rilevante Interesse Nazionale PRIN 2009 2009X3L8SW_004: Techniques and technologies for movement ecology (2011-2013)
Role: participant

3. BRIC-INAIL 2015: Miniaturized systems for the evaluation of the biomechanical risk in work-related lifting activities. *Role:* participant

4. BRIC-INAIL 2016: Modular motor control of the non-amputated limb in lower limb amputees: neuro-mechanical characterization of prosthetic gait and effect of the type of prosthesis. *Role:* scientific collaborator

5. BRIC-INAIL 2019: a multi-sensor wearable platform to assess biomechanical risk when interacting with collaborative robots in work-related scenarios. *Role:* scientific collaborator

6. H2020-779963 EUROBENCH – BENCH (2019-2020) Sub-Project: a biomechanical testing platform for of sit-to-stand assessment with an instrumented chair.

Role: Principal Investigator for the Roma Tre research unit

Partners: University of Stuttgart (project PI), University College Dublin

Fund: 200k€.

7. BANDO DELLA RICERCA FINALIZZATA RF-2019– CHANGE PROMOTING: (GR-2019-12370352) "Real-Life monitoring of gait stability in people with stroke (ReLiSS): a smart application for a new conception of customized robotic rehabilitation (young researcher)

Role: Principal Investigator for the Roma Tre research unit.

Partners: Fondazione Don Gnocchi (project PI), Fondazione Centri di Riabilitazione Padre Pio Onlus

Fund: 356k€

8. COST Action 16116 - Wearable Robots for Augmentation, Assistance or Substitution of Human Motor Functions.

Role: grant holder for the short term scientific mission “Benchmarking sit-to-stand and stand-to-sit motions executed with wearable robots” (July 2021)

Fund: 2k€

Editorial activity:

Member of editorial committees:

Member of the editorial board of *Frontiers in Neurology –Neurorehabilitation section* (IF = 2.889) - (Review Editor)

Member of the editorial board of *Frontiers in Physiology –Computational Physiology and Medicine section* (IF = 3.367) - (Review Editor)

Member of the editorial board of *Frontiers in Sports and Active Living - Sports Science, Technology and Engineering section* (IF = n.a.) (Review Editor)

Member of the editorial board of *Frontiers in Computational Neuroscience* (IF = 2.536) (Review Editor)

Member of the Editorial Board of *Applied Bionics and Biomechanics* (IF = 1.141) - (Academic Editor)

Reviewer for international journals (more than 80 reviews)

- *Journal of Neuroengineering and Rehabilitation*
- *Journal of Neurophysiology*
- *Journal of Neural Engineering*
- *Neuroscience*
- *Neuroimage*
- *Experimental Brain research*
- *Journal of Electromyography and Kinesiology*
- *Medical Engineering & Physics*
- *Scandinavian Journal of Medicine and Science in Sports*
- *Journal of Sports Sciences*
- *Sensors*
- *European Journal of Sport Science*
- *IEEE Journal of Biomedical and Health Informatics*
- *IEEE Transactions on Neural Systems and Rehabilitation Engineering*
- *IEEE Transactions on Biomedical Circuits and Systems*
- *IEEE Transactions in Biomedical Engineering*
- *Biocybernetics and Biomedical Engineering*
- *PLOS One*
- *Frontiers in Robotics and AI*
- *Scientific Reports*
- *Frontiers in Neurology*
- *International Journal for Numerical Methods in Biomedical Engineering*
- *Biomedical Engineering Online*
- *Gait&Posture*
- *Somatosensory & Motor Research*
- *Journal of Physiology*
- *Journal of Healthcare Engineering*
- *Frontiers in Rehabilitation Sciences*

National and international scientific collaborations:

- Neuroprosthetics research group, Eberhard Karls Universitat, Tubinga
- Laboratorio di Ingegneria Biomedica Biolab3, Università degli Studi Roma Tre
- MARlab, Laboratorio di Analisi del movimento e robotica, Ospedale pediatrico bambino Gesù, Roma
- Dipartimento di Neuroscienze, Università degli Studi Gabriele d'Annunzio, Chieti-Pescara
- Centro Protesi INAIL, Ospedale C.T.O. Centro Traumatologico Ortopedico Andrea Alesini, Roma
- Centre for Biomedical Engineering, University College Dublin UCD, Dublino
- Motion Analysis Lab, Spaulding Rehabilitation Hospital, Harvard Medical School, Boston
- Neural rehabilitation Group, Consejo Superior de Investigacion Cientifica CSIC, Madrid
- Neuroengineering and Medical Robotics Laboratory, Politecnico di Milano

Participation and organization of international congresses:

Podium presentations:

1. IEEE Engineering in Medicine and Biology Conference, EMBC 2011, Boston:
 - "Detection of tremor bursts from the sEMG signal: an optimization procedure for different detection methods"
2. IEEE Engineering in Medicine and Biology Conference, EMBC 2012 San Diego:
 - "Muscle Synergies are consistent when pedaling under different biomechanical demands"
3. World Congress of Medical Physics and Biomedical Engineering 2012, Beijing:
 - "Electromyographic features for the characterization of task-failure during submaximal cycling"
 - "Detecting and characterizing tremor from the surface EMG signal"
4. Mediterranean Conference on Medical and Biological Engineering and Computing MEDICON 2013, Sevilla, Spain:
 - "EMG and kinematics assessment of postural responses during balance perturbation on a 3D robotic platform: preliminary results in children with hemiplegia"
5. International Society of Electrophysiology and Kinesiology Congress, ISEK 2014, Rome:
 - "Merging a library of basic motor modules as a general model of lower limb muscle coordination"
 - "Motor modules in assisted pedaling: preliminary results on healthy subjects"
6. IEEE Engineering in Medicine and Biology Conference, EMBC 2015, Milan:
 - "Neuro-mechanics of muscle coordination during recumbent pedaling in post-acute stroke patients"
7. IEEE International Symposium on Medical Measurements and Applications, MeMeA 2018, Roma:
 - "Wavelet-based detection of gait events from inertial sensors: analysis of sensitivity to scale choice".

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- "The effect of Non-Negative Matrix Factorization initialization on the accurate identification of muscle synergies with correlated activation signals"
8. International Society of Electrophysiology and Kinesiology Congress, ISEK 2018, Dublin, Ireland.
 - "Indexes for the Functional Evaluation of Dynamic Stability in Amputees Gait"
 - "The generalization of Motor Adaptation is explained through the recruitment of previously adapted muscle synergies."
 9. International Society of Electrophysiology and Kinesiology Congress, ISEK 2020, Dublin, Ireland.
 - "Muscle synergies adaptations in presence of localized muscle fatigue during pedalling"

Organization:

1. Organizer of the Special Session "Muscle Synergies: towards clinically oriented applications" and Session Chairman at the "International Conference on Neurorehabilitation, ICNR 2016", Segovia, Spagna.
2. Organizer of the Special Session "Measuring myoelectric function to predict, assess, assist in, and recovery from motor related disorders", and Session Chairman at the "IEEE International Symposium on Medical Measurements and Applications, MeMeA 2018", Roma, Italia.
3. Organizer of the Special Session "Redundancy and Modularity in Motor Control: neuroscience, prosthetic, rehabilitative and assistive approaches" and Session Chairman at the International Conference on Neurorehabilitation, ICNR 2018, Pisa, Italia.
4. Member of the scientific and organizing committee of the XXI national SIAMOC congress.
5. Organizer of the Special Session "Advanced measurement techniques and methodologies for the quantitative assessment of gait function in health and pathology" and Session Chairman at the "IEEE International Symposium on Medical Measurements and Applications, MeMeA 2021", Neuchatel, Svizzera.

Awards:

2016: Best Paper Award alla conferenza internazionale IEEE IECBES 2016, Kuala Lumpur, Malesia: "Spatio-temporal gait parameters as estimated from wearable sensors placed at different waist levels"

Habilitation:

Abilitazione Scientifica Nazionale (ASN, Italian National Habilitation for professorship) for the role of Associate Professor in the field 09/G2, Bioengineering

Teaching activity:

Teacher:

2015-2018: Adjunct professor for the course of “*Biomedical Electronics*” – (CFU 9, s.s.d. ING-INF/06) – Master’s degree in Electronics Engineering, LM-29, Niccolò Cusano University, Roma. A.Y. 2015-2016, 2016-2017, 2017-2018.

2016-2017: Adjunct professor for the course of “*Neural Engineering*” – (CFU 6, s.s.d. ING-INF/06) – Master’s degree in Biomedical Engineering LM-21, University Roma Tre. A.Y. 2016-2017.

2017-2021: Professor for the course of “*Neural Engineering*” – (CFU 6, s.s.d. ING-INF/06) – Master’s degree in Biomedical Engineering LM-21, University Roma Tre. A.Y. 2017-2018, 2018-2019, 2019-2020, 2020-2021.

2022-202x: Professor for the course “*Quantitative Methods– Electronics and Computer Bioengineering*” – (CFU 1, s.s.d. ING-INF/06) – Bachelor’s degree in Physiotherapy L/SNT2, Department of Clinical and Experimental Medicine, University of Messina. A.Y. 2021-2022

2020 – 2022: Member of the PhD Board in Applied Electronics, University Roma Tre

2022-202x: Member of the PhD Board in Bioengineering applied to Medical Sciences, University of Messina

Teaching assistant:

2009-2010, 2010-2011: Teaching assistant and member of the evaluation board for the course of “*Biomedical Instrumentation*” – Bachelor’s degree in Electronics Engineering L-8, University Roma Tre

2010-2011, 2012-2013, 2013-2014, 2014-2015, 2015-2016: Teaching assistant and member of the evaluation board for the course of “*Biomedical Data Processing*” – Master’s degree in Biomedical Engineering LM-21, University Roma Tre

2011-2012: Teaching assistant and member of the evaluation board for the course of “*Fundamentals of Bioengineering*” – Master’s degree in Biomedical Engineering LM-21, University Roma Tre

2014-2015: Teaching assistant and member of the evaluation board for the course of “*Medical devices and systems*” – Master’s degree in Biomedical Engineering LM-21, University Roma Tre

Scientific Publications

International Journal Articles:

S. Ranaldi, G. Corvini, **C. De Marchis**, S. Conforto. The Influence of the sEMG Amplitude Estimation Technique on the EMG–Force Relationship (2022). *Sensors*, 22, 3972.

C. De Marchis*, S. Ranaldi*, T. Varrecchia, M. Serrao, S. F. Castiglia, A. Tatarelli, A. Ranavolo, F. Draicchio, F. Lacquaniti, S. Conforto. Characterizing the Gait of People With Different Types of Amputation and Prosthetic Components Through Multimodal Measurements: A Methodological Perspective (2022). *Front. Rehabil. Sci.* 3:804746

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- S. Ranaldi, **C. De Marchis**, G. Severini, S. Conforto. An Objective, Information-Based Approach for Selecting the Number of Muscle Synergies to be Extracted via Non-Negative Matrix Factorization (2021). *IEEE Trans Neur Sys Rehab Eng*, 2021
- D. Torricelli*, **C. De Marchis***, A. d'Avella, D. Nemati Tobaruela, F.O. Barroso, J.L. Pons. Reorganization of Muscle Coordination Underlying Motor Learning in Cycling Tasks (2020). *Front Bioeng Biotechnol*, 8: 800.
- S.F. Castiglia, A. Ranavolo, T. Varrecchia, **C. De Marchis**, A. Tatarelli, F. Magnifica, L. Fiori, C. Conte, F. Draicchio, S. Conforto, M. Serrao. Pelvic obliquity as a compensatory mechanism leading to lower energy recovery: Characterization among the types of prostheses in subjects with transfemoral amputation (2020). *Gait&Posture*, 80: 280-284.
- A. Tatarelli, M. Serrao, T. Varrecchia, L. Fiori, F. Draicchio, A. Silveti, S. Conforto, **C. De Marchis**, A. Ranavolo. Global Muscle Coactivation of the Sound Limb in Gait of People with Transfemoral and Transtibial Amputation (2020). *Sensors* 20(9), 2543.
- T. Varrecchia, **C. De Marchis**, F. Draicchio, M. Schmid, S. Conforto, A. Ranavolo. Lifting Activity Assessment Using Kinematic Features and Neural Networks (2020). *Appl Sci* 10(6), 1989.
- E. Ambrosini, M. Parati, E. Peri, **C. De Marchis**, C. Nava, A. Pedrocchi, G. Ferriero, S. Ferrante. Changes in leg cycling muscle synergies after training augmented by functional electrical stimulation in subacute stroke survivors: a pilot study (2020). *J Neuroeng Rehabil* 17:1, 1-14.
- C. De Marchis***, S. Ranaldi*, M. Serrao, A. Ranavolo, F. Draicchio, F. Lacquaniti, S. Conforto. Modular motor control of the sound limb in gait of people with trans-femoral amputation (2019). *J Neuroeng Rehabil* 16:1. 132
- C. Caramia, **C. De Marchis**, M. Schmid. Optimizing the Scale of a Wavelet-Based Method for the Detection of Gait Events from a Waist-Mounted Accelerometer under Different Walking Speeds (2019). *Sensors*, 2019, 19, 1869.
- T. Varrecchia, M. Serrao, M. Rinaldo, A. Ranavolo, S. Conforto, **C. De Marchis**, A. Simonetti, I. Poni, S. Castellano, A. Silveti, A. Tatarelli, L. Fiori, C. Conte, F. Draicchio. Common and specific gait patterns in people with varying anatomical levels of lower limb amputation and different prosthetic components (2019). *Human Movement Science*, 66: 9-21
- C. De Marchis**, J. Di Somma, M. Zych, S. Conforto, G. Severini. Consistent visuomotor adaptations and generalizations can be achieved through different rotations of robust motor modules (2018). *Scientific Reports*, 8(1), 12657.
- S. Ranaldi, **C. De Marchis**, S. Conforto. An automatic, adaptive, information-based algorithm for the extraction of the sEMG envelope (2018). *J Electromyogr Kinesiol* 42: 1-9.
- M. H. Soomro, G. Giunta, A. Laghi, D. Caruso, M. Ciolina, **C. De Marchis**, S. Conforto, M. Schmid. Segmenting MR images by level-set algorithms for perspective colorectal cancer diagnosis. *Lecture Notes in Computational Vision and Biomechanics*. 27. pp. 396-406 (2018)
- M.H. Soomro, S. Conforto, G. Giunta, S. Ranaldi, **C. De Marchis**. Comparison of initialization techniques for the accurate extraction of muscle synergies from myoelectric signals via nonnegative matrix factorization (2018). *Applied Bionics and Biomechanics*. 2018(2018), 1-10.

A.M. Castronovo, **C. De Marchis**, M. Schmid, S. Conforto, G. Severini. Effect of Task Failure on Intermuscular Coherence Measures in Synergistic Muscles (2018). *Applied Bionics and Biomechanics* 2018(2018), 1-13

T. Varrecchia, **C. De Marchis**, M. Rinaldi, F. Draicchio, M. Serrao, M. Schmid, S. Conforto, A. Ranavolo. Lifting activity assessment using surface electromyographic features and neural networks (2018). *International Journal of Industrial Ergonomics*. 66, 1-9.

C. Caramia, I. Bernabucci, C. D'Anna, **C. De Marchis**, M. Schmid. Gait parameters are differently affected by concurrent smartphone-based activities with scaled levels of cognitive effort (2017). *PLOS one*: 12(10)

E. Ambrosini*, **C. De Marchis***, A. Pedrocchi, G. Ferrigno, M. Monticone, M. Schmid, T. D'Alessio, S. Conforto, S. Ferrante. Neuro-mechanics of recumbent leg cycling in post-acute stroke patients (2016). *Ann Biomed Eng* 44(11), 3238-3251

C. De Marchis, T. Santos Monteiro, C. Simon-Martinez, S. Conforto, A. Gharabaghi. Multi-contact functional electrical stimulation for hand opening: electrophysiologically driven identification of the optimal stimulation site (2016). *J Neuroeng Rehabil* 13:22

C. De Marchis, G. Severini, A.M. Castronovo, M. Schmid, S. Conforto. Intermuscular coherence contributions in synergistic muscles during pedaling (2015). *Exp Brain Res*. 233(6), 1907-1919.

C. De Marchis, M. Schmid, D. Bibbo, I. Bernabucci, S. Conforto (2013). Inter-individual variability of forces and modular muscle coordination in cycling: a study on untrained subjects. *Hum Mov Sci* 32(6): 1480-1494.

C. De Marchis, M. Schmid, D. Bibbo, A.M. Castronovo, T. D'Alessio, S. Conforto (2013). Feedback of mechanical effectiveness induces adaptations in motor modules during cycling. *Front Comput Neurosci* 7:35.

C. De Marchis, M. Schmid, S. Conforto (2012). An optimized method for tremor detection and temporal tracking through repeated second order moment calculations on the surface EMG signal. *Med Eng Phys* 34(9): 1268-1277.

(*Equivalent Contribution)

Abstract appeared in International Journals:

S. Conforto, **C. De Marchis**, G. Severini, T. D'Alessio. Tremor detection and tracking through sEMG analysis. *Gait & Posture*(30): S56-S57. (2009)

S. Rinaldi, **C. De Marchis**, M. Rinaldi, T. Varrecchia, A. Marchesi, A. Silveti, M. Serrao, A. Ranavolo, M. Schmid, S. Conforto, F. Draicchio. Modular motor control of the contralateral limb in trans-femoral amputees gait. *Gait & Posture*, 57: 24-25, 2017

M. Guitolini, **C. De Marchis**, M. Rinaldi, T. Varrecchia, G. Chini, A. Silveti, M. Serrao, A. Ranavolo, M. Schmid, F. Draicchio, S. Conforto. Kinematic gait analysis in amputees for functional evaluation of dynamic stability. *Gait & Posture*, 57: 2, 2017

Peer-reviewed articles in International Conference Proceedings:

- S. Ranaldi, **C. De Marchis**, M. Serrao, A. Ranavolo, F. Draicchio, F. Lacquaniti, S. Conforto, S. (2021). Modular Control of Kinematics in Prosthetic Gait: Low-Dimensional Description Based on the Planar Covariation Law. In *European Medical and Biological Engineering Conference* (pp. 833-839). Springer, Cham.
- A. Tatarelli, M. Serrao, T. Varrecchia, L. Fiori, A. Silveti, **C. De Marchis**, S. Ranaldi, F. Draicchio, S. Conforto, A. Ranavolo. Global lower limb muscle coactivation during walking in trans-femoral and trans-tibial amputees. *IEEE International Symposium on Medical Measurements and Applications (MeMeA)*, Bari, Italy: June 1-3, (2020)
- C. Caramia, D. Bibbo, C. D'Anna, **C. De Marchis**, S. Ranaldi, T. Varrechia, S. Conforto, M. Schmid. Wearable-based Temporal Parameters of Gait in Circuitous Routes under Dual-Task Conditions. *Conf Proc IEEE Med Eng Biol Soc 2019*: Pages 1224-1227.(2019)
- C. Caramia, **C. De Marchis**, M. Schmid. Differentiating the effects of motor and cognitive dual-tasks on gait performance of young healthy subjects. *ICNR2018: Biosystems and Biorobotics: Vol. 21, 2019, Pages 278-282*
- E. Peri, E. Ambrosini, **C. De Marchis**, C: Nava, L. Longoni, A. Pedrocchi, G. Ferriero, S. Ferrante. Does cycling training augmented by functional electrical stimulation impact on muscle synergies in post-acute stroke patients?. *ICNR2018: Biosystems and Biorobotics: Vol. 21, 2019, Pages 334-338*
- C. Caramia, I. Bernabucci, C. D'Anna, **C. De Marchis**, M. Schmid. Gait ratios and variability indices to quantify the effect of using smartphones in dual-task walking. *World Congress on Medical Physics and Biomedical Engineering 2018* , Prague, Czech Republic: June 3-7, (2018)
- C. Caramia, I. Bernabucci, C. D'Anna, **C. De Marchis**, A. Scorza, M. Schmid. Wavelet-based detection of gait events from inertial sensors: analysis of sensitivity to scale choice. *IEEE International Symposium on Medical Measurements and Applications (MeMeA)*, Rome, Italy: June 11-13, (2018)
- S. Ranaldi, **C. De Marchis**, M. Rinaldi, S. Conforto. The effect of Non-Negative Matrix Factorization initialization on the accurate identification of muscle synergies with correlated activation signals. *IEEE International Symposium on Medical Measurements and Applications (MeMeA)*, Rome, Italy: June 11-13, (2018)
- G. Severini, **C. De Marchis**. Effect of SNR normalization on the estimation of muscle synergies from EMG datasets. *IEEE International Symposium on Medical Measurements and Applications (MeMeA)*, Rome, Italy: June 11-13, (2018)
- A. Scorza, F. Orsini, **C. De Marchis**, C. Caramia, S.A. Sciuto, J. Galo. A Comparative Study on the Influence of Phantoms and Test objects on Quality Control Measurements in B-mode ultrasound systems: preliminary results. *IEEE International Symposium on Medical Measurements and Applications (MeMeA)*, Rome, Italy: June 11-13, (2018)
- C. Caramia, I. Bernabucci, S. Conforto, **C. De Marchis**, A. Proto, M. Schmid. Spatio-temporal gait parameters as estimated from wearable sensors placed at different waist levels. *IEEE Conference on Biomedical Engineering and Sciences (IECBES)*, Kuala Lumpur (Malaysia): December 4-8, (2016)

D. Torricelli, D. Nemati, **C. De Marchis**, F.O. Barroso, J.L. Pons. Is modular control of cycling affected by learning? Preliminary results using muscle biofeedback. *ICNR2016: Converging Clinical and Engineering Research on Neurorehabilitation II* (2016).

C. De Marchis, E. Ambrosini, M. Schmid, M. Monticone, A. Pedrocchi, G. Ferrigno, T. D'Alessio, S. Conforto, S. Ferrante. Neuro-mechanics of muscle coordination during recumbent pedaling in post-acute stroke patients. *Conf Proc IEEE Med Eng Biol Soc* (2015).

M. Mancini, M.C. Pellicciari, D. Brignani, P. Mauri, **C. De Marchis**, C. Miniussi, S. Conforto. Automatic artifact suppression in simultaneous tDCS-EEG using adaptive filtering. *Conf Proc IEEE Med Eng Biol Soc* (2015).

C. D'Anna, D. Bibbo, **C. De Marchis**, M. Goffredo, M. Schmid, S. Conforto. Comparing different visual biofeedbacks in static posturography. *IEEE-EMBS International Conference on Biomedical and Health Informatics (BHI)*, Valencia, Spain: June 1-4, (2014)

C. De Marchis, F. Patané, M. Petrarca, S. Carniel, M. Schmid, S. Conforto, E. Castelli, P. Cappa, T. D'Alessio. EMG and kinematics assessment of postural responses during balance perturbation on a 3D robotic platform: preliminary results in children with hemiplegia. *Proceedings of MEDICON 2013*. (2013)

S. Conforto, A.M. Castronovo, **C. De Marchis**, M. Schmid, M. Bertollo, C. Robazza, S. Comani, T. D'Alessio. The fatigue vector: a new bi-dimensional parameter for muscular fatigue analysis. *Proceedings of MEDICON 2013* (2013)

S. Comani, L. Bortoli, S. Di Fronso, E. Fiho, **C. De Marchis**, M. Schmid, S. Conforto, C. Robazza, M. Bertollo. ERD/ERS patterns of shooting performance within the multi-action plan model. *Proceedings of MEDICON 2013* (2013)

C. De Marchis, A.M. Castronovo, D. Bibbo, M. Schmid, S. Conforto. Muscle synergies are consistent when pedaling under different biomechanical demands. *Conf Proc IEEE Med Eng Biol Soc 2012:3308-3311*.(2012)

A.M. Castronovo, **C. De Marchis**, D. Bibbo, S. Conforto, T. D'Alessio. Neuromuscular adaptations during submaximal prolonged cycling. *Conf Proc IEEE Med Eng Biol Soc 2012:3612-3615*.(2012)

C. De Marchis, S. Conforto, G. Severini, M. Schmid, T. D'Alessio. Detection of tremor bursts from the sEMG signal: an optimization procedure for different detection methods. *Conf Proc IEEE Med Eng Biol Soc 2011:7508-7511*.(2011)

G. Severini, S. Conforto, **C. De Marchis**, M. Schmid, T. D'Alessio. A SNR-independent formulation of a double threshold algorithm for the estimation of muscle activation intervals. *Conf Proc IEEE Med Eng Biol Soc 2011:7500-7503*.(2011)

Abstract in International Conferences:

C. De Marchis, M. Guaitolini, S. Conforto. Indexes for the Functional Evaluation of Dynamic Stability in Amputees Gait. *XXII ISEK Congress*, Dublin, Ireland (2018).

C. De Marchis, J. Di Somma, M. Zych, S. Conforto, G. Severini. The generalization of Motor Adaptation is explained through the recruitment of previously adapted muscle synergies. *XXII ISEK Congress*, Dublin, Ireland (2018).

S. Ranaldi, **C. De Marchis**, S. Conforto. An automatic procedure for the accurate extraction of the sEMG envelope. *XXII ISEK Congress*, Dublin, Ireland (2018).

S. Ranaldi, **C. De Marchis**, S. Conforto. Muscle synergies of the contralateral lower limb in trans-femoral amputees gait. *XXII ISEK Congress*, Dublin, Ireland (2018).

M.H. Soomro, **C. De Marchis**. Optimization of Non-Negative Matrix Factorization to Identify Muscle Synergies. *IEEE Optimization and Inverse Problems in Electromagnetism 2016*, Rome, Italy (2016).

D. Torricelli, **C. De Marchis**, D. Nemati Tobaruela, F. Barroso, J.L. Pons. Reorganization of neuromuscular coordination when learning new cycling tasks. *XXI ISEK Congress*, Chicago, IL, USA, (2016).

C. De Marchis, F. Patané, M. Petrarca, S. Carniel, M. Schmid, S. Conforto, E. Castelli, P. Cappa, T. D'Alessio. Neuro-mechanical assessment of postural responses on 3-D robotic perturbed platform in children with hemiplegia. *SIAMOC-ESMAC 2014*. (2014)

C. De Marchis, M. Schmid, I. Bernabucci, S. Conforto. Merging a library of basic motor modules as a general model for lower limbs muscle coordination. *XX ISEK Congress*, Rome, Italy: 15-18 July, (2014)

C. De Marchis, E. Ambrosini, S. Ferrante, M. Schmid, M. Monticone, A. Pedrocchi, S. Conforto. Motor modules in assisted-pedaling: preliminary results on healthy subjects. *XX ISEK Congress*, Rome, Italy: 15-18 July, (2014)

C. De Marchis, S. Conforto, G. Severini, M. Schmid, T. D'Alessio. Detecting and characterizing tremor from the surface EMG signal. *World congress of Medical Physics and Biomedical Engineering*. Beijing (2012)

A.M. Castronovo, **C. De Marchis**, G. Severini, D. Bibbo, T. D'Alessio. Electromyographic features for the characterization of task-failure during submaximal cycling. *World congress of Medical Physics and Biomedical Engineering*. Beijing (2012)

C. De Marchis, I. Bernabucci, G. Severini, S. Conforto, M. Schmid, T. D'Alessio. *Wrist tremor reduction through a novel neural model*. Proceedings of the XVIII ISEK congress (2010)

Abstract in National Conferences:

M.H. Soomro, **C. De Marchis**, S. Conforto, G. Giunta. NNSVD based method to extract muscle synergies. *Proceedings of GNB2016*, Naples, Italy (2016)

C. De Marchis, I. Bernabucci, M. Schmid, A.M. Castronovo, S. Conforto. Merging a library of basic motor modules accounts for the muscle coordination of a variety of motor tasks. *Proceedings of GNB2014*, Pavia, Italy: 22-24 June, (2014)

C. De Marchis, A.M. Castronovo, D. Bibbo, S. Conforto. Stability of muscle synergies across different pedaling strategies. *Proceedings of the III GNB Congress*. Rome.(2012).

A.M. Castronovo, **C. De Marchis**, D. Bibbo, T. D'Alessio. Evaluation of neuromuscular efficiency at task-failure during submaximal cycling. *Proceedings of the III GNB Congress*. Rome.(2012).

G. Severini, S. Conforto, M. Schmid, **C. De Marchis**, T. D'Alessio. A real-time EEG-EMG multimodal approach for the detection of voluntary activity in patients affected by tremor impairments. *Proceedings of the II GNB Congress*. Turin.(2010).

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