

# Curriculum Vitae

## Personal Informations

Name: Mariann Percze-Mravcsik  
Birth name: Mariann Mravcsik  
Date and place of birth: 15. 08. 1990, Hungary  
Contact: percze-mravcsik.mariann@wigner.hu



## Education

- 2014 - University of Pécs, Doctoral School of Biology and Spotbiology, PhD student
- 2012 - 2014 Semmelweis University, Faculty of Physical Education and Sport Sciences, Human Kinesiology, MSc
- 2009 - 2012 Semmelweis University, Faculty of Physical Education and Sport Sciences, Human Kinesiology, BSc

## Work experience

- 2018 - Junior researcher  
Wigner Research Centre for Physics, Department of Computational Sciences, Neurorehabilitation and Motion Control Research Group
- 2017 – 2018 Assistant research fellow  
Wigner Research Centre for Physics, Department of Computational Sciences, Rehabilitation-technology Research Group

## Foreign languages

English intermediate  
German basic

## Projects

OMAA 94öu7 project „Entwicklung von Rehabilitationsprotokollen für Rückenmarkeverletzte“  
hungarian-austrian cooperational programme

GINOP-2.3.3-15-2016-00032 „Formation of Research Centre of Neuro Rehabilitation and Human-Computer Interaction at the University of Pécs“

GINOP 2.3.2.-15-2016-00022 „3D printing and design visualization technologies, interdisciplinary research, education and development center for the University of Pécs“

## List of publications

Botzheim L, Laczko J, Torricelli D, **Mravcsik M**, Pons JL, Oliveira Barroso F. (2021) Effects of gravity and kinematic constraints on muscle synergies in arm cycling. *Journal of Neurophysiology*, 2021 Apr 1;125(4):1367-1381. doi: 10.1152/jn.00415.2020. Epub 2021 Feb 3. PMID: 33534650.

**Mravcsik, M.**, Botzheim, L., Zentai, N., Piovesan, D., Laczko, J. (2021). The Effect of Crank Resistance on Arm Configuration and Muscle Activation Variances in Arm Cycling Movements. *Journal of Human Kinetics*, 76, 175–189. <https://doi.org/10.2478/hukin-2021-0053>

Katona, P; **Mravcsik, M**; Botzheim, L; Klauber, A; Cserháti, P; Laczkó, J (2021) Bionikai megoldások gerincvelősérültek mozgás-rehabilitációjában és sportjában – Funkcionális Elektromos Izomingerléssel végzett kerékpározás : Bionic solutions in movement-rehabilitation and sports in the case of people with spinal cord injury *MAGYAR SPORTTUDOMÁNYI SZEMLE* 22 : 1 (89) pp. 3-18. , 16 p.

**Mravcsik M**, Klauber A, Putz M, Kast C, Mayr W, Laczko J (2019): Tricycling by FES of quadriceps muscles leads to increased cycling speed over series of trainings of persons with flaccid paraplegia. *Proceedings of the 13th Vienna FES Workshop*. pp.133-135. ISBN 978-3-900928-13-1

Botzheim L, **Mravcsik M**, Zsenak I, Piovesan D, Laczko J (2019) Jerk decomposition during bimanual independent arm cranking. *IEEE 16th International Conference on Rehabilitation Robotics (ICORR)*, Toronto, ON, Canada, 2019, pp. 264-269. DOI: 10.1109/ICORR.2019.8779526

Botzheim L, **Mravcsik M**, Malik Sz, Zentai N, Laczko J (2019): The effect of crank resistance on muscle synergies during arm cranking; *Progress in Motor Control XII: Movement Improvement Conference (2019)*, Amsterdam, Hollandia

Botzheim L, **Mravcsik M**, Laczko J. (2019) Comparing cyclic human arm movement patterns. *8th Interdisciplinary Doctoral Conference 2019, Book of Abstracts*, Pécs, 2019

Botzheim L, Laczko J, **Mravcsik M**, Malik Sz, Szabo S. (2019). Finding 1-Dimensional substructures in set of kinematic time series in a cyclic motor task. *29th Annual Meeting of the Society for the Neural Control of Movement, Poster Abstracts 1G-98*. p. 67-68. Toyama, Japan, 2019. Online.

D. Piovesan, **M. Mravcsik**, J. Laczko (2018): Relating smooth arm cycling to the control of interaction torque, *Progress in Clinical Motor Control I: Neurorehabilitation conference*, 23-25 July 2018

**M. Mravcsik**, C. Kast, JL. Vargas Luna, A. Weerayot, C. Hofer, Sz. Malik, M. Putz, W. Mayr, J. Laczko (2018): FES driven cycling by denervated muscles. *22. Annual Conference of the International Functional Electrical Stimulation Society*, 28-31 August 2018,

L. Botzheim, S. Malik, **M. Mravcsik**, J. Laczko (2018) Dependence of EMG signals on body position in arm cycling movement. Poster number: PII.34. *International Society of Electrophysiology and*

Kinesiology Congress 2018, Dublin. Online: [https://isek.org/wp-content/uploads/2018/06/ISEK2018\\_Book\\_of\\_Abstracts.pdf](https://isek.org/wp-content/uploads/2018/06/ISEK2018_Book_of_Abstracts.pdf)

**Mravcsik M**, Kast C, Malik Sz, Mayr W, Laczko J. (2018): Cycling speed increases through Functional Electrical Stimulation (FES) assisted tricycling trainings of spinal cord injured individuals., Proceedings of the World Congress on Medical Physics & Biomedical Engineering, Book of Abstracts pp. 593.

Botzheim L, **Mravcsik M**, Malik Sz, Zentai N, Laczko J (2017): Body position affects muscle activity variances in the non-dominant arm during arm cycling, Program number: 152.02/JJ9, Neuroscience 2017, Washington 11-15 November, Online: Program book p 892-893. (Sunday a.m)

Malik Sz, **Mravcsik M**, Botzheim L, Klauber A, Zentai N, Laczko J (2017): Number and strength of muscle synergies in bimanual arm cycling as a function of crank resistance. Progress in Motor Control XI. Conference, 2017.07.19-22. Miami USA.

**Mravcsik M**, Andras Kaluber, Jozsef Laczko (2017): FES driven cycling: increased crank resistance in the case of lower level of injury – comparison of case studies. IFESS 2017, 21st Annual Meeting of the International Functional Electrical Stimulation Society, RehabWeek, London, 17-20. July, Book of Abstracts p.87.

Malik Sz, **Mravcsik M**, Botzheim L, Laczko J (2017): Muscle synergies during arm cycling by dominant and non-dominant arms. In: Annual Meeting of the Society for the Neural Control of Movement, Poster Abstracts 1-G-134. p. 99-100.

Laczko J, **Mravcsik M**, Katona P.: *Control of Cycling Limb Movements: Aspects for Rehabilitation*. Adv Exp Med Biol. 2016;957:273-289. doi: 10.1007/978-3-319-47313-0\_15.

**M. Mravcsik**, N. Zentai, L. Botzheim, \*J. Laczko: Unimanual versus bimanual arm cycling movements - muscle activity variances, Program number: 806.01 / FF14, Neuroscience 2016, San Diego, 12 - 16 November, 2016, online

L. Botzheim, S. Malik, **M. Mravcsik**, N. Zentai, J. Laczko: Comparison of Muscle Activities During Arm Cycling in Horizontal and Vertical Planes. V. International Scientific Conference - Motor Control 2016, Wisła, Poland, 14 - 16 September 2016, <http://motorcontrol2016.pl/wp-content/uploads/2016/09/Book-of-Abstracts-MC2016.pdf>, Page 25

**M. Mravcsik**, A. Klauber and J. Laczko: FES driven lower limb cycling by four and eight channel stimulations – a comparison in a case study. 12th Vienna International Workshop on FES, 2016. szeptember 08-09, Bécs, Ausztria, Proceedings Book 89-93. oldal, ISBN: 978-3-900928-12-4

N. Zentai, **M. Mravcsik**, L. Botzheim, Sz. Malik, J. Laczko: Kinematic Stability of Arm Cycling by the Dominant and Nondominant Arm. 38th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, 2016. augusztus 16-20., Orlando, FL, USA, poszter  
[https://embs.papercept.net/conferences/conferences/EMBC16/program/EMBC16\\_ContentListWeb\\_3.html#frct13\\_27](https://embs.papercept.net/conferences/conferences/EMBC16/program/EMBC16_ContentListWeb_3.html#frct13_27)

**Mravcsik M.**, Laczkó J.: Funkcionális elektromos izomingerléssel létrehozott kerékpározás hatásai, különböző minták alkalmazása. Fiatal Sporttudósok III. Országos Konferenciája. Szombathely, Magyarország: 2015.12.04 -2015.12.05., MAGYAR SPORTTUDOMÁNYI SZEMLE 16. évf. 64. szám, 50. oldal (2015)

**M. Mravcsik**, L. Botzheim, N. Zentai, J. Laczko: Variances of joint configuration and muscle activity patterns during arm cycling against external resistances. Program Number 609.06, 2015 Chicago, IL, USA, Society for Neuroscience 2015. Online

**M. Mravcsik**, A. Klauber, J. Laczko: Power output of spinal cord injured individuals during functional electrical stimulation driven bicycling lower limb movement. Progress in Motor Control X. Conference, 2015.07.22-25. Budapest, Hungary, Program Book p 126., ISBN: 978-615-5187-07-0

**M. Mravcsik**, L. Botzheim, N. Zentai, J. Laczko: Stabilization of arm configuration and muscle activity patterns during cycling arm movements against external resistances. Progress in Motor Control X. Conference, 2015.07.22-25. Budapest, Hungary, Program Book p 125., ISBN: 978-615-5187-07-0

**M. Mravcsik**: Muscle activity- and arm configuration variances during arm cycling. Motor Control, Health and Movement Satellite Conference, Pre-symposium of Progress in Motor Control X., Program and abstract book p. 10-11.

**Mravcsik M.**, Klauber A., Laczkó J.: Funkcionális elektromos izomingerléssel végzett edzés hatása a teljesítményre. XII. Országos Sporttudományi Kongresszus. 2015. 06. 04-06.. Eger, Magyar Sporttudományi Szemle 15. évf. 61. szám

**M. Mravcsik**, Laczkó J.: Muscle co-activation during arm cycling against altering crank resistances. 7th World Congress of Biomechanics, Control Number 3864, Boston, USA, July 2014.

**Mravcsik M.**, Laczkó J.: Izomaktivitási és koaktivációs mintázatok különböző ellenállásokkal végzett kézi kerékpározásnál, XI. Országos Sporttudományi Kongresszus. 2014. 06. 05-07. Debrecen, Magyar Sporttudományi Szemle 15. évf. 58. szám 46-47. oldal

**Mravcsik M.:** Co-activation of flexor-extensor muscle pairs during cycling arm movements. The 21th international Congress on Sport Science for Students. April 10-12. 2014. Budapest, Hungary, Program CD p. 28-29.

**Mravcsik M.:** Introduction of muscle activity patterns regarding upper limb cycling movements. 10<sup>th</sup> János Szentágothai Transdisciplinary Conference and student Competition. 4-5. November 2013. Pécs, Hungary. Abstract book p.31.

J. Laczkó, **M. Mravcsik**, Zs. Györfi: Controlling cyclic arm movements while cycling under altering external conditions. Program No. 651.13 2013 Neuroscience Meeting Planner. San Diego, CA, USA, Society for Neuroscience. 9-13. November 2013

**Mravcsik M.**, Györfi Zs., Laczkó J.: Karal végzett kerékpározásnál mért izomaktivitás minták vizsgálata. A Magyar Élettani, Farmakológiai, és Mikrocirkulációs Társaságok 2013. évi közös Tudományos Kongresszusa. 2013. 06. 5-8. Budapest. Program book 138. oldal

**Mravcsik M.:** Izomaktivitási mintázatok függése a hajtókar ellenállásától felső végtaggal végzett kerékpározás esetén. XXXI. National Scientific Students' Associations Conference, Testnevelés- és Sporttudományi Szekció. 2013. április 4-6. Szeged. Program book p. 79.

**Mravcsik M.:** Izomaktivitási mintázatok függése a hajtókar ellenállásától felső végtaggal végzett kerékpározás esetén. Házi Tudományos Diákköri Konferencia, Semmelweis Egyetem Testnevelési és Sporttudományi Kar (TF). 2012. november 20. Budapest. Program book p 37-38.

**Mravcsik M.:** Izmok elektromos aktivitásának egymáshoz viszonyított értéke kézi kerékpározáskor. Házi Tudományos Diákköri Konferencia, Semmelweis Egyetem Testnevelési és Sporttudományi Kar (TF). 2012. február 13. Budapest. Program book p 38.