

Bachelor Thesis at Chair of Human Movement Science

Effects of motor imagery on muscle activation

Motor imagery can support motor skill learning in sport and in rehabilitation. There is research which suggests that imagery can improve neuromuscular activation. Such processes can support the maintenance or increase in muscle force.

This thesis is part of a project that studies neuromuscular activation using non-invasive trans-cranial magnetic stimulation (TMS) over the primary motor cortex while participants are doing a motor imagery task.

Your task will be to assist during the TMS experiment and to conduct a questionnaire on motor imagery ability. The imagery scores of participants will be compared to the electromyographic potentials (measured with EMG) which are evoked during imagery by the TMS.

You will learn how to conduct an empirical experiment, including measuring EMG and the application of TMS stimulation. The supervisors will provide counselling in every step of the thesis project.

Study Participants: Healthy young adults.

Supervision: Dr. Waltraud Stadler (TUM) and Yassamin Lange

Contacts:

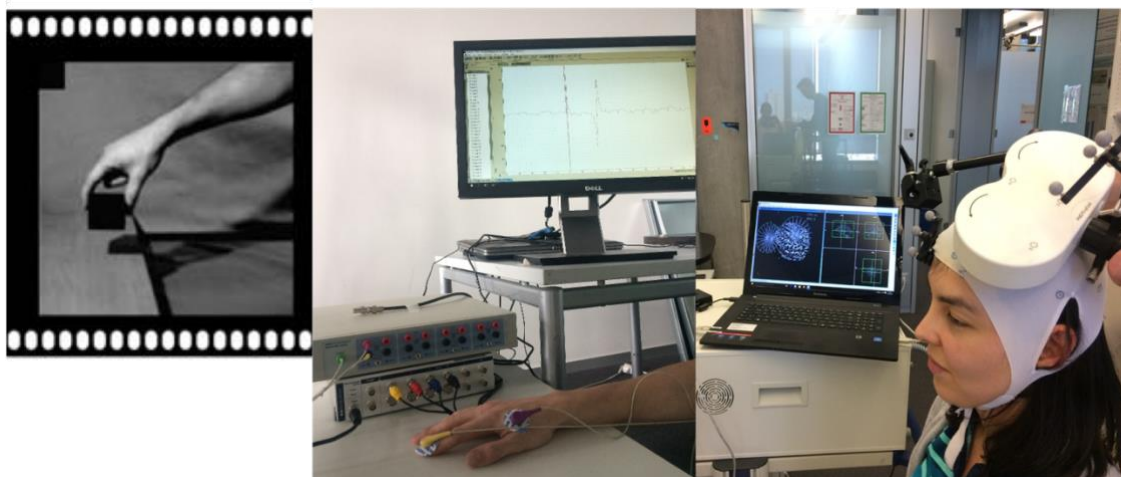
waltraud.stadler@tum.de, yassi.lange@tum.de

Information/Literature:

Bassolino, M., Campanella, M., Bove, M., Pozzo, T., & Fadiga, L. (2014). Training the motor cortex by observing the actions of others during immobilization. *Cereb Cortex*, 24(12), 3268-3276. <https://doi.org/10.1093/cercor/bht190>

Isaac, A., Marks, D., & Russell, D. (1986). An instrument for assessing imagery of movement: The Vividness of Movement Imagery Questionnaire (VMIQ). *Journal of Mental Imagery*, 10, 23-30. <https://doi.org/10.1037/t07980-000>

Mizuguchi, N., Nakata, H., Uchida, Y., & Kanosue, K. (2012). Motor imagery and sport performance. *The Journal of Physical Fitness and Sports Medicine*, 1, 103-111. <https://doi.org/10.7600/jpfsm.1.103>



Figures: Setup for the experiment with an EMG recording (left) and the TMS system (right). Participants get precise instructions on motor imagery on a computer screen.