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NON-INVASIVE BRAIN STIMULATION AND EATING BEHAVIOURS: STATE OF THE ART AND IN-DEPTH EXPLORATION OF OUTCOME MEASURES

MILICA ZEKOVIĆ

Type: Systematic Review

Where: Online

When: April 2023 - May 2024

Methods & techniques: Transcranial magnetic stimulation (TMS), Transcranial direct current stimulation (tDCS), Transcranial alternating current stimulation (tACS), Health outcome measures, Nutritional status assessment, Dietary regimen adherence

ABOUT THE MENTOR

Milica Zeković is Associate Research Professor at the Centre of Research Excellence in Nutrition and Metabolism, Institute for Medical Research, National Institute of Republic of Serbia, University of Belgrade.

She has expertise in public health nutrition, metabolism, and dietary intake. Her research addresses various aspects of nutrition impact on human health including the evaluation of nutrient adequacy, development and evaluation of dietary intake assessment research infrastructure, analyses of dietary behaviours, and investigation of the safety and efficacy of specific nutraceuticals. She is involved in epidemiological studies, clinical trials, methodological appraisals, and reviews. Furthermore, she was actively involved in the development and application of a software-based platform for standardized and harmonized food consumption collection, comprehensive dietary intake assessment, and nutrition planning. She is interested in novel approaches such as non-invasive brain stimulation for supporting dietary behaviour change in at-risk and clinical populations.

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Check out one of her works: Zeković, M., et al (2022) Evaluation of dietary intake and anthropometric status in 1-9-year-old children living in Serbia: National food consumption survey according to the EU menu methodology, *Nutrients*, 14, 3091.

ABOUT THE TOPIC

Non-invasive brain stimulation (NIBS) emerged as a promising set of techniques for regulating eating-related behaviours in various population groups, including overweight adults, people with chronic conditions that require adherence to strict dietary regimens, and people with different eating disorders and addictions. Scientific evidence suggests it may complement conventional approaches used in the management of eating disorders, health-detrimental nutritional habits, impulsivity in food selection, cravings, and consumption. The abundance of research endeavours in this field is progressively increasing featuring a broad spectrum of study designs, neuromodulation targets, analytical settings, and heterogeneous treatment protocols. Nevertheless, the precise determination of relevant outcome measures remains elusive thus warranting further exploration.

What will be done?

We will conduct a systematic literature review following PRISMA guidelines.

Over the last decade, a growing number of experimental studies and clinical trials assessed the efficacy of NIBS in regulating eating behaviours. A systematic literature review will be conducted focusing on the effects of NIBS on eating-related behaviours to address the following research questions: Can brain stimulation support adherence to dietary regimens? Can brain stimulation help weight management? What are the critical determinants to define personalized NIBS protocols complementary to individually tailored nutrition approaches? As we systematize the current state of knowledge on the NIBS application in dietary research, we will analyse current research practices from the personalization perspective both at the intervention (NIBS) and outcome (dietary assessment) level, with particular attention directed towards the variability and relevance of the outcome measures.

Methodical appraisal of the current knowledge base in this field is essential to better understand the challenges and gaps to be filled in order to translate fundamental research on precision NIBS into real-world nutrition practice and clinical settings.

The group of up to 5 selected early-stage researchers will be working under the supervision of Dr Milica Zekovic in collaboration with Dr Jovana Bjekić and Dr Saša Filipović.

The research will result in one review paper in a peer-review journal.

What will you learn?

- ✓ How to conduct a systematic review following PRISMA guidelines
- ✓ How to write a review article for publication in a scientific journal
- ✓ How are eating-related behaviours assessed and how is nutritional status assessment performed
- ✓ How clinical trials with NIBS are designed in nutritional neuroscience

Career benefits

- ✓ Learning about NIBS as a promising approach for regulating eating-related behaviours in various population groups
- ✓ Networking and learning journey with experts in NIBS and nutritional science
- ✓ Experience multidisciplinary approach and exchange of knowledge in a project that bridges two disciplines
- ✓ Establishing connections with peers and enhancing your soft skills to work in an international team
- ✓ Contributing to planned publication as co-authors

What is your role?

You will work in the international team to conduct a literature review and write a manuscript for publication. You will participate in regular online meetings and can work fully remotely on the collaborative project.

ESRS ENGAGEMENT REQUIREMENTS

Time requirements

Each participant is expected to dedicate 3-5 days a month for 12 months period. You will have a keep-on-track monthly online meeting with the mentor and the team members. The working hours will be flexible, and the dynamic will depend on work progress.

Physical location

The work will be done fully remotely.

Skills and knowledge

For joining the group, you should either have a background in neuroscience/neurophysiology and knowledge of various NIBS techniques or experience in behavioural assessments. The advantage will be given to candidates with knowledge of literature search and publication history in NIBS, nutritional science, or related fields.