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TO WHOM IT MAY CONCERN

COST European Cooperation in the field of Scientific and Technical Research

BM1306: Better Understanding of the Heterogeneity of Tinnitus to Improve and Develop  
New Treatments (TINNET)

FINAL REPORT for COST STSM Reference Number: COST-STSM-BM1306-28912

at University Clinic for Psychiatry and Psychotherapy, Paracelsus Private Medical University Nuremberg,  
Germany; Period of STSM: 06.09.-27.09. 2015

**STSM: Neuroimaging techniques in the Diagnostic of Tinnitus and rTMS as a Treatment Option**

Host: University Clinic for Psychiatry and Psychotherapy, Paracelsus Private Medical University  
Nuremberg, Germany; 06.09.-27.09. 2015

Aims:

- Multimodal and multidisciplinary approach in diagnose and treatment of patients with chronic complex tinnitus
- Investigating the effects of rTMS on Tinnitus intensity and the different neuroimaging methods.

**1. DESCRIPTION OF THE WORK CARRIED OUT DURING THE MISSION**

During my stay at University Clinic in Nurnberg (Nord and Sud), I have a chance to see many patients with Tinnitus and with co-morbidities (psychopathology). In my opinion I fulfil the aims of the working plan which were set up together with my supervisor and was approved by management team of the project.

#### First week (07.09. - 11.09.)

As laid down in the detailed working plan in the application process, I spend the first week at : *Institute for Diagnostic and Interventional Radiology, mentor: Dr. Detmar Klaus.*

Becoming familiar and gain knowledge of neuroimaging techniques and methods: Magnet Resonance (MRI) and Functional Magnet Resonance (fMRI) and possibilities for their implementation in clinical practice for diagnostic, treatment and research and have a chance to see a lot of brain case studies with different psychopathology and co-morbidities (including with tinnitus).

I also become familiar with the work of colleagues at the *Clinic of Neurology, Prof. Dr. Frank Erbguth* and *Clinic for Radiology, prof. Dr. Reinhard Loose*. At *Dept. of Neurophysiology, mentor: Prof. Dr. Kneginja Rihter*, I have a chance to see treatment of chronic patients with rTMS and neurofeedback.

#### Second week (14.09.-18.09.)

During the second working week, I have a chance to see multimodal and multidisciplinary approach in diagnose and treatment of patients with chronic complex tinnitus *at the Department for rTMS and Tinnitus ambulance* within the cooperation between the *Clinic for Otorhinolaryngology (Dr. Kristof Becker)* and *Psychiatry and Psychotherapy (Prof. Dr. Kneginja Rihter and Psych. Anja Piehl)*. At Dept. of Neurophysiology, I continue to observe treatments of patients with chronic complex tinnitus, with rTMS and neurofeedback. Also we discussed possibilities for their implementation in clinical practice for diagnostic, treatment and research of Tinnitus. During this week I also continue with training with MRI and fMRI, provide by Dr. Detmar Claus, and observed different brain case studies and made experimental test with fMRI in order to see how it will works for my scientific work in future.

#### Third week (21.09-25.09.)

During this week I have a chance to see treatment of chronic patients with Tinnitus with rTMS, neurofeedback, counselling and Cognitive-Behavioral Therapy for tinnitus including 10 Psychological session. Also attended examinations of this kind of patients at Clinic for Otorhinolaryngology (Dr. Kristof Becker) and multidisciplinary approach and work with Dept. of Clinical psychology, psychological

examination and psychotherapy treatments, mentor: Psych. Anja Piehl. I become familiar with set of psychological test which were used for assessing patients with tinnitus and become interested to translate them on Macedonian language. Patients with chronic tinnitus were complained of impairment in lifestyle, emotional difficulties, sleep deprivation, hindrance with work and social life and a general decrease in health status. Patients with tinnitus have been known to have an increased risk for depression, anxiety, insomnia, etc. During this last working week I also continue with training with neuroimaging techniques, especially with MRI and fMRI, and become familiar with spectroscopy as well, provide by Dr. Detmar Claus, and observed different brain case studies and made second experimental test with fMRI. At *Clinic and Institute of Nuclear medicine*, Dr. Irene Greil showed me basic principles of PET-CT and several case studies of the brain using PET-CT.

Along with the clinical internship and experience, I was involved in scientific activities as well.

I met Prof. Dr. Hartmut Lefheld, Dean for Research at Paracelsus Private Medical University Nuremberg and spend time at his *Department of Neuropsychology* and have opportunities to see neuropsychological examination and were discussed about possibilities for translating of SKT test on Macedonian language and research.

On 23.09. 2015, I gave a lecture at Clinic for Psychiatry and Psychotherapy and present a part of my scientific research regarding dysfunctional cognitions and depression.

I have meetings with Prof. Dr. Gunter Niklewski (Management of Clinic Nuremberg) and members of Paracelsus Private Medical University Nuremberg about possibilities for new collaboration between Paracelsus Private Medical University Nuremberg, Germany and Faculty of Medical Science, UGD, Stip, Macedonia (research, projects, lecturing and clinic practice).

## 2. IMPLICATIONS FOR FUTURE WORK AND COLLABORATION

As an accredited mentor for Ph.D. students in Neuroscience, I believe that in near future will have a chance to rise interest about research topics focus on main aims of TINNET project (Better understanding the heterogeneity of Tinnitus to improve and develop new treatments), emphasizing multimodal and multidisciplinary approach in diagnose and treatment of patients with tinnitus. Also, I am expecting to have possibilities to give topics for graduate research work to some of my students from Faculty of Medical Science- general medicine.

Further, I believe that in near future will have possibilities for dissemination of the new knowledge which gain during my STSM training and possibilities to implement it in our new Labs, which was run by my University, but not finished yet.

I become very interested in scales, psychological tests which my colleagues involved in this project are using during the psychodiagnostic/psychotherapeutical work with patients with Tinnitus, and have proposal to translate them and to examine psychometrics characteristics on Macedonian sample. If they'll show good psychometric characteristics, than to discuss about opportunities for conducting research in Macedonia, at Clinical hospital, Stip, Dept. of Otorhinolaryngology and to become part of TINNET research network.

We have already institutional collaboration with University Clinic for Psychiatry and Psychotherapy, and my involving in this project will be an opportunity to develop a new collaboration with Paracelsus Private Medical University Nuremberg, Germany, including doctoral thesis, projects and research.

If I want to make short conclusion, I will conclude that I fulfil two main aims of my working plans:

- To become familiar and gain experience and knowledge from multimodal and multidisciplinary approach in diagnose and treatment of patients with chronic complex tinnitus;
- To gain experience and knowledge about the effects of rTMS on Tinnitus intensity and the different neuroimaging methods.

At the end of my report I would like to express my gratitude for this generous opportunity and the great exchange with the host institution and colleagues. First of all thank you to the STSSM management team who support me and gave me this grant. I am very grateful to all colleagues from University Clinic for Psychiatry and Psychotherapy I mentioned above, especially to my host supervisor Prof. dr. Knežinja Richter who welcomed me and did her best to provide me opportunities in order to fulfil my working plan. I am also very grateful to Dr. Detmar Claus from the Institute for Diagnostic and Interventional Radiology, who was willing and find time for me to explain principles of working of neuroimaging techniques and showed me a lot of case studies, and opportunities for research work in inspiring and very professional environment, each day during three weeks. I am also very grateful to my Faculty of Medical Science and my University „Goce Delčev“, Stip, Macedonia for their support.

Stip, 06.10.2015

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