

# COGNITIVE IMPAIRMENT AND P300 CHANGES IN PATIENTS WITH MULTIPLE SCLEROSIS

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## Introduction

**Cognitive dysfunction** is one of the seldom analyzed features of demyelinating diseases, particularly multiple sclerosis.

This dysfunction can be shown both by means of **psychological testing**, as well as by means of electrophysiological analysis of **event-related potentials**.

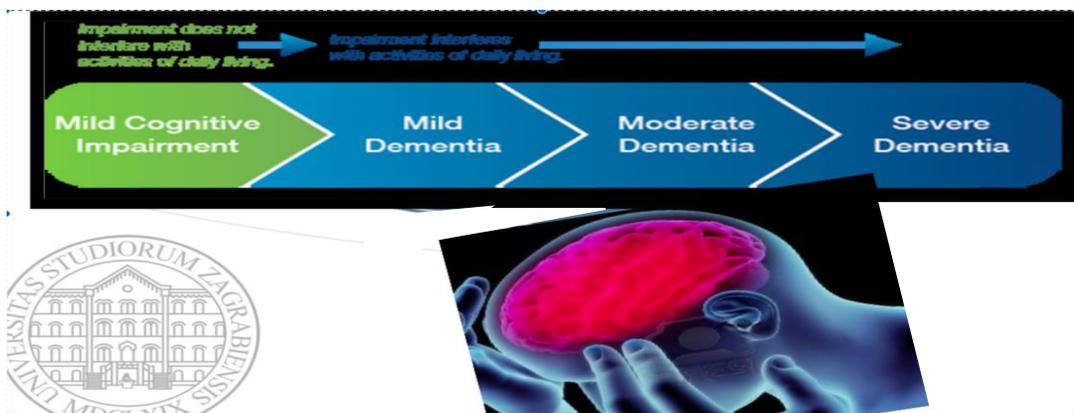
The most reliable electrophysiological parameters for the level of cognitive dysfunction seem to be **latencies and the amplitudes of P300 waves**.

## Material & Methods

The study included a **group of 50 patients (37 female, 13 male, mean age 37.5 years) with multiple sclerosis and the age & sex matched control group**. After reviewing their medical records, both groups of participants were subjected to the **auditory event-related potentials testing (auditory stimulation, oddball paradigm, 15% target (high-pitched) and 85% non-target (low pitched) stimuli, total of 1024 stimuli in one run)**. **Psychological testing has been done using the California questionnaire**. Quantitative variables were compared using the **Mann-Whitney Test**. The **Fisher Exact Test** was used for comparing the qualitative data. **Spearman's Rank correlation coefficient**

## Results

The results have shown that **the latencies of late cortical P300 waves are prolonged** in the group of patients suffering from multiple sclerosis, particularly for the target stimuli (both frontal and parietal components). The variability of amplitudes was too great to allow any statistically significant difference between the groups. **Correlation between the electrophysiological and psychological findings** was high and statistically significant. We have also found a **significant positive correlation** between the level of cognitive dysfunction and the present state of disease activity, longer duration of the disease, concomitant hyperthyroidism and symptoms such as quadriplegia, incontinence, disturbances of vision, tinnitus and trigeminal neuralgia



## Conclusion

Electrophysiological studies measuring late cortical P300 wave latencies can be used to indicate the level of cognitive impairment in patients with multiple sclerosis.