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## POSTER-35-

### ■ LONG-TERM COGNITIVE EFFECTS OF SCUBA DIVING

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#### Abstract

Recreational SCUBA (self contained underwater breathing apparatus) diving popularity is increasing tremendously, in Turkey and overseas. It is a safe sport but can become dangerous when practiced in extreme conditions. Most diving injuries are related to the behaviour of the gases, primarily nitrogen, and pressure changes during descent and ascent. In dive-related barotrauma, compressed or expanding gas within the ears, sinuses and lungs causes various forms of neurologic injury. In pulmonary barotrauma of ascent, lung damage can precipitate arterial gas embolism, causing blockage of cerebral blood vessels and alterations of consciousness, seizures and focal neurologic deficits. The aim of the present study was to investigate the association between Event-Related Potentials (ERPs), Neuropsychological Tests (NpTs) performance and exposure indices in experienced air SCUBA divers. A total of forty five right-handed male healthy volunteer (range 25-45 years) were participated in this study. All participants were screened with Physical Examination and Diving Anamnesis in a session prior to NpTs and ERPs testing. Subjects had no history of decompression sickness/illness, systemic, neurological or psychiatric problems and were free from

medications known to affect the central nervous system. Subjects were divided in two groups as Control and Diver Groups. Diver Group was further divided into two groups according to the diving experience (Divers I: with diving experience of 1000 to 2000 times; Divers II: with diving experience of 2000 to 4000 times). Each group consisted of 15 subjects. ERPs were obtained with auditory oddball and visual Continuous Performance Test (CPT). Delayed Recall Performance of Divers II group was worse than those of Control and Divers I groups in Rey-Osterrieth Complex Figure Tests ( $p=0.045$ ). Total True Score Performance of Divers I group was better than performance of Control and Divers II groups in Tower of London Tests ( $p=0.013$ ). In Go condition of CPT, P200 amplitudes of was lower and P300 latency was longer in both Diver groups compared to controls ( $p=0.024$  and  $p=0.047$ , respectively). These findings suggest that exposure to hyperbaric environment could have lead to some cognitive decline, and ERPs, and NpTs may help early detection of those dysfunctions.

**Keywords:** event-related potentials (ERPs), auditory oddball, CPT, neuropsychological tests (NpTs), cognitive impairments, SCUBA divers