

[Sleep](#). 2002 Jun 15;25(4):401-11. [Links](#)

## **Procedural skill learning in obstructive sleep apnea syndrome.**

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**STUDY OBJECTIVES:** To better characterize the cognitive deficits observed in obstructive sleep apnea syndrome (OSAS) by examining procedural skill learning abilities. **DESIGN:** Procedural skill learning was assessed using Mirror Tracing and Rotary Pursuit skill learning tasks. Subjects also completed a comprehensive neuropsychological test battery. **SETTING:** Cognitive testing was performed during the day following the second of two consecutive nights during which sleep and respiratory variables were recorded. **PARTICIPANTS:** Two groups (28 OSAS patients and 18 normal controls) with equivalent mean age and education levels. **INTERVENTIONS:** N/A. **MEASUREMENTS AND RESULTS:** No significant differences in learning rates were observed between the groups on the Rotary Pursuit Task. On the Mirror Tracing Task, overall learning of the skill and transfer to a new figure or to the reverse tracing direction was similar in the OSAS and NC groups. However, there was a subgroup of OSAS subjects (n=11) who showed marked difficulties in the initial acquisition of the Mirror Tracing Task. This subgroup's performance was no longer significantly different from that of controls and OSAS subjects without initial adaptation difficulty in the subsequent trials. Performance of subjects who had difficulty with initial adaptation on the Mirror Tracing was also significantly lower on tests of frontal executive function, but not on episodic memory tests. Sleep and respiratory variables did not distinguish between the two subgroups of OSAS patients. However, none of the young OSAS subjects (<40 years) presented this deficit. **CONCLUSION:** Results indicate that contrary to this study's hypothesis, OSAS patients did not show procedural skill learning deficits. A subgroup of OSAS patients, however, did show deficits in initial skill adaptation and difficulties on other neuropsychological tests. Frontal dysfunction and decrement in psychomotor efficiency and vigilance appeared to be the most consistent explanation for characterizing the profile of neuropsychological test results among the OSAS patients.

PMID: 12071541 [PubMed - indexed for MEDLINE]