

## **Results of therapy of sleep apnea syndrome by electromyostimulation**

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### **Introduction**

So far there are only few scientific findings about the influence of electromyostimulation (EMS) on sleep parameters and morphology of mouth floor muscles in patients with obstructive sleep apnea syndrome (OSAS).

### **Material and methods**

In 17 male patients with OSAS over a time period of 4 weeks 2 times daily the enoral-cutaneous EMS was applied by the apparatus BMR PolyStim 262 (Bio-Medical Research Company). All patients were previously and after 4 weeks standardized in sleeping laboratory, they were registered on two following days by polysomnography and previously divided into 3 groups according to the RDI: group 1 with light OSAS (RDI < 10), group 2 with moderate OSAS (RDI 10 - 20) and group 3 with strong OSAS (RDI 21 to 40 and higher). Additionally, the volumetric 3D-sonographical measurement of the M. geniohyoideus was carried out.

### **Results**

The patients had an age of 37 - 66 years (mean 52.2 years). 24 % had a light, 65 % a moderate and 11 % a strong OSAS. After 4 weeks stimulation a reduction of the RDI in all groups of 34% (group 1: RDI 34 %, group 2: 32 %, group 3: 46 %) could be proved with a responder ratio of 76%. No improvement (non-responder) of the sleep parameters were only registered in group 1 and 2. In the sonographical measurements after 4 weeks stimulation an increase of volume could be proved in average of 7 %, 8 % and 8.3 % (group 1 – 3). In cases of a high initial volume (>12 ml) of the muscles less training effects could be registered. 6 months after stimulation therapy an increase of the muscle volumes (mean 39%) could be found.

### **Conclusions**

The EMS enables an effective, noninvasive therapy of OSAS which should continuously be applied otherwise a relapse of the muscles is to be expected.

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