

## Anodal cerebellar tDCS can reduce sleep onset latency in Parkinson's disease patients

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*Introduction:* Sleep problems are frequent in Parkinson's disease (PD), and influence the quality of life of patients [1]. Studies have shown that transcranial direct current stimulation (tDCS) can improve sleep quality in both healthy people [2] and PD patients [3].

*Objective:* To assess the effect of 1-week anodal cerebellar tDCS on sleep quality in PD patients.

*Methods:* We assessed sleep quality in 9 patients with PD (aged 42-77, 4 females) using the Pittsburgh Sleep Quality Index (PSQI) questionnaire, which assesses subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleeping disturbances, use of sleeping medication, and daytime dysfunction (higher scores indicate greater dysfunction). Patients were assessed before and after completing a cycle of cerebellar tDCS sessions (2 mA for 20 minutes, twice-daily, anode over the cerebellum midline, cathode over the right deltoid muscle). All patients received sham and anodal stimulations in a randomised balanced order. Analyses were conducted using Wilcoxon signedrank tests ( $\alpha=.05$ ).

*Results:* Following anodal tDCS, we observed improvements in sleep latency (baseline vs. post-tDCS; median [1st-3rd quartiles]= 1 [0-1] vs. 0 [0-0];  $p=.046$ ) and PSQI total score (6 [4-9] vs. 5 [4-7];  $p=.034$ ), while there were no differences after sham tDCS. Baseline PSQI scores were not significantly different between anodal and sham conditions.

*Conclusions:* Cerebellar tDCS may prove to be an effective option for PD patients who experience sleep difficulties, and in particular for those who have problems falling asleep. Larger studies are needed in order to substantiate our preliminary results, which nevertheless suggest an involvement of the cerebellum in the top-down regulation of sleep.

### References

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