

## Title: Acupuncture in the Treatment of Parkinson's Disease with Sleep Disorders and Dose Response

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Acupuncture can effectively improve the sleep state, and most PD patients have sleep disorders. In this study, we used acupuncture to intervene in the sleep state of PDSD, so as to observe the changes and dose effect of Acutreatment on PDSD. 57 patients with PDSD, during medical treatment, aged 40–70 years were recruited to enroll in this trial. Each participant completed one condition, namely, Acutreatment (n = 30) and sham Acutreatment (placebo, stick flat needle on skin, n = 27). The Acutreatment was applied for 30 min once a day for a 30-day observation. UPDRSIII scores for motor symptom assessment and sleeping quality were assessed by PDSS-2, ESS as well as ActiGraph. Scale evaluation was made on the first day of admission and the thirtieth day. There were significant differences on all outcome indicators, except UPDRSIII, on day 30 compared with day 1 ( $P < 0.01$ ). Compared with sham Acutreatment therapy, Acutreatment therapy has better performance in sleep latency, total sleep time, and sleep efficiency ( $P < 0.01$ ). ActiGraph indicated that sleep efficiency of sham or Acutreatment in day 6 was significantly lower than that in day 5 ( $P < 0.05$  and  $P < 0.01$ ) and Acutreatment in day 7 was significantly lower than that in day 6 ( $P < 0.01$ ). The sleep efficiency of Acutreatment in days 5, 6, and 7 was significantly higher than that in sham Acutreatment ( $P < 0.01$ ). Moreover, Acutreatment in days 26, 27, and 28 was significantly higher than that in sham Acutreatment ( $P < 0.01$ ). There was a close correlation between the difference of UPDRSIII and PDSS-2 ( $r = 0.5090$ ,  $P < 0.05$ ), sleep latency ( $r = 0.7201$ ,  $P < 0.01$ ), TST ( $r = -0.6136$ ,  $P < 0.01$ ), and sleep efficiency ( $r = -0.6707$ ,  $P < 0.01$ ). The sleep condition of PDSD patients can be improved by acupuncture, which can effectively relieve sleep quality, can also be shown by ActiGraph, and shows a dose-response relationship. Future research should explore Acutreatment with a larger sample size and compare the Acutreatment protocol goal formation of the system scheme.

### Biography

I've got my doctoral degree in 2020 and master degree in 2009 from Zhejiang Chinese Medical University, Hangzhou and bachelor's degree from Hebei Medical University, Shijiazhuang. I have published 15 papers in English or in Chinese in reputed journals. Now I am an clinician working in The Second Affiliated Hospital of Zhejiang Chinese Medical University, Hangzhou, Zhejiang, China and held various social positions related to acupuncture and moxibustion.