

Objective: This study is to explore the effects of resistance exercise preconditioning (PRE) on sleep, autonomic nervous system function, and anxiety-like behavior in middle cerebral artery occlusion (MCAO) rats. **Methods:** (1) We used 8-week-old male Wistar-Kyoto rats (WKY), and the rats were randomly divided into 3 groups: control (Con), 1 week resistance exercise preconditioning (1PL), and 4 week resistance exercise preconditioning (4PL) groups. The exercise groups carried out weighted climbing ladder training. All rats suffered MCAO surgery at the 5th week and elevated plus maze test 2 weeks after surgery. (2) We used the wireless sensor to record 12 hours of light period (ZT0-12) for subsequent analysis. **Results:** (1) Compared to baseline (Bas) states, the number of interruptions/duration (I/D) of Con group during the awake (AW) state significantly increased at week 4 (W4) and after MCAO (M14). Compared with W4, the total AW time of M14 in 1PL group decreased significantly. The I/D of all groups in quiet sleep (QS) state significantly increased at M14 compared with Bas, especially during the second half of the light period (ZT6-12). (2) Compared with Bas state, all groups showed the significant increased on R-R interval (RR) in the AW and QS states of M14. In addition, the AW-RR of the 1PL group at M14 was significantly higher than that at W4. Compared with Bas states, the high frequency power (HF) component in the Con group increased significantly at M14, and this phenomenon was obviously showed in the first half of the light period (ZT 0-6). In the 1PL group at M14, HF in both AW and QS states significantly increased compared with Bas states, and this phenomenon was especially showed in the first half of the light period. (3) The results in the elevated plus maze test showed the 4PL group spent a longer time in the open arms and less time in the closed arms compared to those of the Con and 1PL groups. (4) The AW-HF in all PRE groups was positively correlated with open arms time. Only 1PL group showed a negative correlation between QS-HF and closed arms time. **Conclusion:** one week of PRE increases parasympathetic activity during AW and QS after MACO, which indicates that PRE can modulate the effects of MCAO on sleep and autonomic nervous system. In addition, 4 week of PRE can improve anxiety-like behavior after MCAO.

中文題目：阻力訓練預處理對缺血性中風大鼠的睡眠、自律神經功能及焦慮行為之影響

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