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Poster Presentation

Effect of Voluntary Exercise on Learning and Memory Impairments in Sleep Deprived Female Rats

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Abstract

Introduction: Sleep disorders are common problems in modern societies affecting different aspects of individuals' lives. Many studies have reported that sleep deprivation (SD) leads to impairments in hippocampus-dependent learning and memory formations. Physical exercise has been shown to improve learning and memory. The objective of the current study was to investigate the effects of Voluntary exercise on cognitive functions of female rats following sleep deprivation. **Materials and Methods:** Intact female Wistar rats were used in the present study. The exercise protocol was 4 weeks of voluntary wheel running. The multiple platform method was applied for the induction of 72 h sleep deprivation and the cognitive function was evaluated using Morris water maze (MWM). ANOVA and repeated measures were used to analyze the data and $P < 0.05$ was considered statistically significant. **Results:** Throughout the investigation, significant learning and memory impairment was observed in sleep-deprived rats compared to the control group. Voluntary exercise alleviated the SD-induced learning and memory impairment. **Conclusion:** The results of our study confirmed the negative effects of SD on cognitive functions in female rats and voluntary exercise seems to protect rats from these effects.

Keywords: Sleep deprivation, Voluntary exercise, Morris water maze, Female rats

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