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Letter To Editor

Treadmill running improves spatial learning and memory in the rats with intracerebroventricular injection of streptozotocin

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Exercise has positive effects on central nervous system, especially when there is a context of disorder.[1] Considering the prevalence of Alzheimer's disease and lack of a decisive treatment, this study aimed to evaluate the effect of exercise on learning and memory in rats after intracerebroventricular injection of streptozotocin (ICV-STZ), a well defined model for Alzheimer's disease .[2]

Experimental groups consisted of sham-rest, sham-exercise, lesion-rest and lesion–exercise groups. Rats in lesion group received ICV-STZ. In the exercise group, rats were made to run on a treadmill (20 m/min, 0-degree inclination, 50 min/day, 4 weeks). Morris water maze test was used to evaluate spatial learning and memory.

The results showed that spatial learning and memory indices were significantly impaired in the rats with ICV-STZ (Figure 1). However, exercise prevented impairments as there was a significant difference between lesion–exercise and lesion–rest groups.

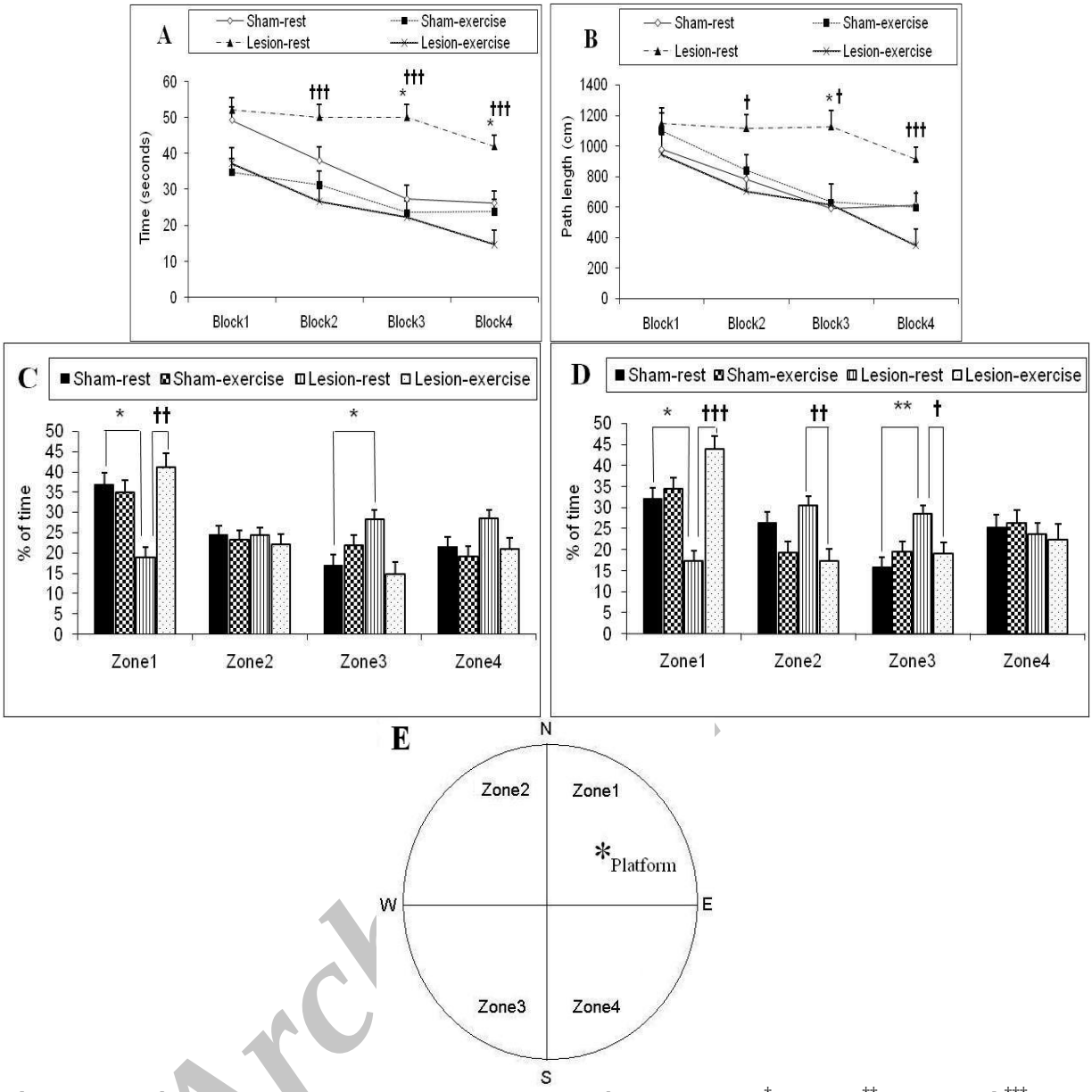
The findings of this study suggested that similar to Alzheimer's disease, ICV-STZ severely impairs cognitive process, but exercise prevents this damage. Therefore, exercise probably is helpful in prevention and alleviation of cognitive disorders in Alzheimer's disease.

Mahdieh Yosefi[1], *Parham Reisi*[2], *Hojjatallah Alaei*[3], *Ali Asghar Pilehvarian*[4], *Bahman Rashidi*[5]

Conflict of Interests

Authors have no conflict of interests.

1- Student, Department of Basic Sciences, Isfahan Payame Noor University, Isfahan, Iran
2- Assistant Professor, Biosensor Research Center and Department of Physiology, School of Medicine, Isfahan University of Medical Sciences, Isfahan, Iran
3- Professor, Department of Physiology, School of Medicine, Isfahan University of Medical Sciences, Isfahan, Iran
4- Assistant Professor, Department of Basic Sciences, Isfahan Payame Noor University, Isfahan, Iran
5- Assistant Professor, Department of Anatomical Sciences and Molecular Biology, School of Medicine, Isfahan University of Medical Sciences, Isfahan, Iran
Corresponding Author: Parham Reisi
E-mail: p_reisi@med.mui.ac.ir



Result are presented as mean ± SEM; * $p < 0.05$, ** $p < 0.01$ vs. sham-rest group, $^{\dagger}p < 0.05$, $^{\dagger\dagger}p < 0.01$ and $^{\dagger\dagger\dagger}p < 0.001$ vs. lesion-exercise group; n = 8-11.

Figure 1. Effects of exercise and ICV-STZ on the escape latencies (A) and the path length (B) at different block to reach the platform (lower numbers indicate better performance); and performance during the probe trials as measured by mean percentage (%) of time spent in each of the four zones 1 day (C) and 1 week (D) after spatial acquisition phase. Schematic diagram of tank and site of the platform (E).

References

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