Letter To Editor

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

Exercise has positive effects on central nervous system, especially when there is a context of disorder. 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.

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, Parham Reisi, Hojjatallah Alaei, Ali Asghar Pilehvarian, Bahman Rashidi

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, † p < 0.05, †† p < 0.01 and ††† 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**
