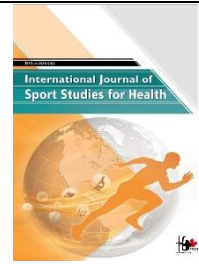


# International Journal of Sport Studies for Health

Journal Homepage



## Changes in Oxidant–Antioxidant Status of Hippocampal Tissue Following Eight Weeks of Aerobic Exercise and Vitamin E Supplementation in Reserpine-Induced Parkinsonian Rats




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Editor	Reviewers
<p>Pantelis Theo Nikolaidis<sup>1</sup> School of Health and Caring Sciences, University of West Attica, Athens, Greece l.youzbashi@znu.ac.ir</p>	<p><b>Reviewer 1:</b> Farhad Namjoo<sup>1</sup> Department of Psychology and Counseling, KMAN Research Institute, Richmond Hill, Ontario, Canada. Email: farhadnamjoo@kmanresce.ca <b>Reviewer 2:</b> Seyed Mohammad Hosseini<sup>1</sup> Assistant Professor, Department of Health and Rehabilitation in Sports, Shahid Beheshti University, Tehran, Iran. Email: moh_hosseini@sbu.ac.ir</p>

### 1. Round 1

#### 1.1 Reviewer 1

Reviewer:

The sentence “Given the more favorable effects of combining exercise with vitamin E, the simultaneous use of these two interventions is recommended in neurodegenerative diseases” is quite strong. Consider adding a brief mention of any potential side effects or practical limitations for combining these interventions to provide a balanced perspective in the Abstract.

You state “aged 14–16 months, weighing 250–270 grams,” but there is no mention of how the animals were randomized into groups. Consider adding a sentence on the randomization process to ensure methodological rigor.

The inclusion of eight healthy control rats (HC) is mentioned, but please specify whether these HC rats underwent the same housing, handling, and treadmill acclimation procedures without the reserpine injection. This will clarify if any behavioral or physiological differences could arise from differential handling.

The sentence “From the second week onwards, treadmill speed increased by 2 m/min each week” is clear, but please provide rationale for choosing this incremental speed increase. Was it based on pilot testing, literature precedent, or physiological thresholds for rodents?

You mention 30 mg/kg vitamin E administered daily. It would be valuable to reference a specific study or guideline that supports this dosage in the context of neuroprotection, as it helps validate why this particular dose was selected.

The immediate isolation of the hippocampus is commendable for preserving tissue integrity. However, clarify whether any protease inhibitors or antioxidant buffers were used during sample storage at  $-70^{\circ}\text{C}$  to prevent further oxidation or protein degradation prior to analysis.

The reliance on ELISA kits from different manufacturers (ZelBio, Navand Lab Kit) is mentioned. Consider adding a sentence about whether kit validation or assay reliability (e.g., intra-assay and inter-assay coefficients of variation) was assessed to ensure result accuracy.

When presenting SOD, TAC, and MDA data, it might help readers if you provide specific effect sizes or percentage changes alongside p-values. This allows a better understanding of the practical significance, rather than statistical significance alone.

Author revised the manuscript and uploaded the updated document.

## 1.2 Reviewer 2

Reviewer:

The statement “Among these diseases, Parkinson’s disease (PD) is identified as the second most common disease after Alzheimer’s disease” is clear, but it would strengthen the paper to include more current global epidemiological data (e.g., prevalence and incidence rates over the last five years) to contextualize the urgency of PD research.

You mention an annual cost of \$52 billion in the United States due to PD. It would be helpful to clarify whether this figure pertains to direct medical costs only or includes indirect costs (e.g., lost productivity, caregiving). This additional detail will enhance the economic impact argument.

In the sentence “Under these conditions, the balance between oxidants and antioxidants shifts in favor of oxidants,” consider briefly mentioning the role of neuroinflammation (e.g., microglial activation) as it is closely linked to oxidative stress and might be relevant for a more comprehensive mechanistic explanation.

The statement “Additionally, TAC levels in the Res+AT and Res+AT+VE groups were higher than in the Res+VE group ( $P = 0.001$ )” is important. Please consider adding a table or figure that directly compares all intervention groups side by side, making these differences visually clearer.

The mechanistic explanation linking exercise to PI3K–NRF2 activation is well-stated. However, consider including a brief mention of alternative antioxidant signaling pathways (e.g., FOXO or PGC-1 $\alpha$ ) and whether these might also play a role in the observed benefits.

The sentence “VE directly activates the PI3K pathway, facilitating antioxidant enzyme transcription via NRF2 activation” is intriguing. Please include a reference or a brief discussion of in vitro or in vivo studies that specifically demonstrate vitamin E’s direct effect on PI3K activation, to bolster this claim.

Author revised the manuscript and uploaded the updated document.

## 2. Revised

Editor’s decision after revisions: Accepted.

Editor in Chief’s decision: Accepted.