

Exploring the Potential Effect of Negative Air Ions for Rehabilitation in Cerebral Palsy and Polycystic Ovary Syndrome

Serebral Palsi ve Polikistik Over Sendromunda Rehabilitasyon için Negatif Hava İyonlarının Potansiyel Etkisinin Araştırılması

 Ammara Rafique¹

 Zara Sami²

1- Indus University of Health Sciences, Indus College of Physical Therapy and Rehabilitation, Karachi, Pakistan

2- Bahria University Health Sciences, Department of Biochemistry, Karachi, Pakistan.

Dear Editor,

The population of Pakistan is steadily growing, leading to a corresponding rise in both communicable and non-communicable diseases. Though it seems counterintuitive, negative air ions (NAIs) are beneficial, and positive air ions are detrimental to health. Diseases may occur when there is an imbalance of positive and negative ions in the body, halting normal human functioning.

NAIs have been known for over a century (1). They are oxygen molecules with negatively charged electrons within their structure. One cannot sense NAIs as they are tasteless, odorless, and invisible. Two sources of NAIs include natural and man-made sources. NAIs are abundant in the natural environment and are more likely present in cosmic rays, clean air, green mountains, thunderstorms, forests, sea, rainfall, sunlight, and waterfalls. Man-made sources include energy stones, antibacterial showers, anion napkins, negative ion generators, special bracelets, and sanitary pads.

Research findings suggest that NAIs have the potential to ameliorate allergies, anxiety, attention, abnormal behavior, cognition, depression, energy levels, fatigue, mood, ovarian cancer, performance, respiratory function, sleep quality, spasticity, and numerous other bodily functions by fostering alkalinity within the body (2-6). A notable limitation of existing research is the predominant reliance on animal samples rather than human subjects, thereby impeding a robust assessment of the potential beneficial role of NAIs in humans.

Cerebral palsy (CP) is a neurological condition characterized by impairments in balance, coordination, movement, muscle tone, and motor skills, whereas polycystic ovary syndrome (PCOs) involves endocrine dysregulation leading to menstrual irregularities and metabolic dysfunction. Both CP and PCOs involve serotonin, crucial for neurodevelopment and endocrine modulation. Studies indicate that superoxide ions contribute to the effects of NAIs (7,8), which can reduce

serotonin levels by oxidizing it into tryptamine-4,5-dione. Reduced serotonin levels resulting from NAIs are linked to specific biological effects and may offer potential improvement for individuals inflicted with CP and PCOs. However, despite evidence from studies (2-8), medical professionals are still wary regarding the use of NAIs.

After reviewing existing literature, we conducted a first-phase clinical trial to assess the effects of NAIs on individuals with CP and PCOs, aiming to determine if NAI intervention could improve these conditions. Permission for the trial was obtained from the Institutional Bio-Ethics Committee of the University of Karachi (IBC-2017) as well as from the participating individuals. The participants were allocated randomly to the control and intervention groups. In multiple experimental trials, researchers have utilized concentrations of NAIs ranging from 1,600 to 1,500,000 NAIs/cm³, with durations spanning from less than one hour to weekly intervals (9). In our investigation, an intervention group was subjected to a concentration of 10,000 NAIs/cm³ for a duration of 45 minutes over six weeks, facilitated by a negative ionizer device. The sessions were held in a controlled room environment to ensure consistent levels of NAIs, with monitoring conducted using an air ion counter. The investigation encompassed the evaluation of blood parameters and cognitive functions both preceding and after the intervention, aimed at monitoring its effects. Blood parameters were assessed through biochemical, hematological, and hormonal analyses, while cognitive functions were assessed using Lumosity software. Findings would be of considerable interest to cognitive scientists, neuroscientists, and gynecologists as they may help them in rehabilitating patients with these disorders.

We suggest that it is important to raise awareness of the beneficial and deleterious effects of NAIs on human health and scientists shall extend research endeavors in this domain to procure more precise evidence.

Correspondence: Ammara Rafique, Indus College of Physical Therapy and Rehabilitation, Indus University of Health Sciences, Karachi, Pakistan. E-Mail: ammararafique92@gmail.com

Cite as: Rafique A, Sami Z. Exploring the Potential of Negative Air Ions for Rehabilitation in Cerebral Palsy and Polycystic Ovary Syndrome Phnx Med J. 2024;6(2):82-83.

Received: 13.02.2024

Accepted: 26.04.2024

Online Published: 14.05.2024



Conflict of Interest: No conflict of interest was declared by the authors.

Funding: There is no financial support of any person or institution in this research.

Approval of final manuscript: All authors.

REFERENCES

1. Krueger AP, Reed EJ. Biological Impact of Small Air Ions: Despite a history of contention, there is evidence that small air ions can affect life processes. *Science*. 1976;193(4259):1209-13.
2. Jiang SY, Ma A, Ramachandran S. Negative air ions and their effects on human health and air quality improvement. *Int J Mol Sci*. 2018;19(10):2966.
3. Chu CH, Chen SR, Wu CH, Cheng YC, Cho YM, Chang YK. The effects of negative air ions on cognitive function: an event-related potential (ERP) study. *Int J Biometeorol*. 2019;63:1309-17.
4. Bajirova M. Negative Ions and Ovarian Cancer. *EC Gynaecology*. 2017;1:17-22.
5. Tom G, Poole MF, Galla J, Berrier J. The influence of negative air ions on human performance and mood. *Hum factors*. 1981;23(5):633-6.
6. Rafique A, Naz H. Negative Air Environment-Induced Rehabilitation of Spasticity And Behavior During Physiotherapy in Cerebral Palsy Patients. *Biosight*. 2023;4:52-63.
7. Ryushi T, Kita I, Sakurai T, Yasumatsu M, Isokawa M, Aihara Y, Hama K. The effect of exposure to negative air ions on the recovery of physiological responses after moderate endurance exercise. *Int J Mol Sci*. 1998;41:132-6.
8. Goldstein N. Reactive oxygen species as essential components of ambient air. *Biochemistry (Moscow)*. 2002;67(2):161-70.
9. Alexander DD, Bailey WH, Perez V, Mitchell ME, Su S. Air ions and respiratory function outcomes: a comprehensive review. *J Negat Results BioMed*. 2013;12:1-6.