The Impact of Movement, Nutrition, and Music on the Electrophysiology of the Brain Among School Children

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Abstract:

Econeurobiology explores how environmental factors like nutrition, physical activity, and music impact brain development, particularly focusing on brain electrophysiology and its connection to academic performance in school children. This study utilized Quantitative Electroencephalography (QEEG) to monitor real-time brain function changes. QEEG recordings were conducted in a controlled environment, using 19 scalp locations based on the 10-20 system, with optimal conditions for temperature (24-26°C), noise reduction, and dim lighting.

Results showed that alpha waves, linked to relaxation and reflection, were more prominent than gamma waves, which are related to problem-solving and concentration. A significant increase in both alpha and gamma wave power was observed when comparing the consumption of traditional versus processed foods, with a greater augmentation in the alpha band.

Physical activity also affected brain activity, with a marked rise in alpha and gamma waves during the transition from rest to light physical activity, such as walking. However, intense activity had no measurable impact, showing brain activity similar to rest.Listening to music similarly led to a significant increase in alpha waves, with a smaller rise in gamma waves.

These findings underscore the vital role environmental factors play in shaping brain function, health, and well-being, and they are recommended as potential tools for future medical therapies.

Keywords:

Brain Nutrition, Physical Activity, Music, Electrophysiology, Cognitive Performance.