

Impact of Interventions on Brain Functional Connectivity in Young Male Basketball Players: A Comparative Study

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Abstract : Introduction: This study delves into the influence of diverse interventions on brain functional connectivity among young male basketball players. Given the significance of understanding how interventions affect cognitive functions in athletes, particularly in the context of basketball, this research contributes to the growing body of knowledge in sports neuroscience. Methods: Three distinct groups were selected for comprehensive investigation: the Motivational Interview Group, Placebo Consumption Group, and Ritalin Consumption Group. The study involved assessing brain functional connectivity using various frequency bands (Delta, Theta, Alpha, Beta1, Beta2, Gamma, and Total Band) before and after the interventions. The participants were subjected to specific interventions corresponding to their assigned groups. Results: The findings revealed substantial differences in brain functional connectivity across the studied groups. The Motivational Interview Group exhibited optimal outcomes in PLI (Total Band) connectivity. The Placebo Consumption Group demonstrated a marked impact on PLV (Alpha) connectivity, and the Ritalin Consumption Group experienced a considerable enhancement in imCoh (Total Band) connectivity. Discussion: The observed variations in brain functional connectivity underscore the nuanced effects of different interventions on young male basketball players. The enhanced connectivity in specific frequency bands suggests potential cognitive and performance improvements. Notably, the Motivational Interview and Placebo Consumption groups displayed unique patterns, emphasizing the multifaceted nature of interventions. These findings contribute to the understanding of tailored interventions for optimizing cognitive functions in young male basketball players. Conclusion: This study provides valuable insights into the intricate relationship between interventions and brain functional connectivity in young male basketball players. Further research with expanded sample sizes and more sophisticated statistical analyses is recommended to corroborate and expand upon these initial findings. The implications of this study extend to the broader field of sports neuroscience, aiding in the development of targeted interventions for athletes in various disciplines.

Keywords : electroencephalography, Ritalin, Placebo effect, motivational interview

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