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## Neural Correlates of Inhibitory Control Following Moderate Intensity Aerobic Exercise: An ALE Meta-Analysis

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**Introduction:** Engaging in aerobic exercise is a well-established and accessible approach to enhancing inhibitory control and supporting brain health across the lifespan. Building on this evidence, the present study aimed to examine the overall neural changes in inhibitory control associated with aerobic exercise by applying the activation likelihood estimation (ALE) method. **Methods:** Activation likelihood estimation (ALE), a coordinate-based meta-analysis technique, was employed to identify consistent patterns of brain activation across multiple experiments. In this approach, activation foci are represented as probability distributions centered on their reported coordinates. **Results:** A total of five studies were included in this analysis. Peak activations were identified in the right Inferior Parietal Lobule, right Superior Parietal Lobule, left Precuneus, and left Cuneus. **Conclusions:** The current ALE meta-analysis shows that moderate intensity aerobic exercise, particularly cycling, consistently engages the inferior and superior parietal lobules, precuneus, and cuneus, regions that are essential for attentional regulation, visuospatial functions, and the integration of sensory input that supports effective inhibitory control.

**Keywords:** Aerobic exercise, cycling, moderate intensity, inhibitory control, ALE meta-analysis

**Authors:** Mr WIDODO, Akhmad Fajri (Graduate Institute of Injury Prevention and Control, College of Public Health, Taipei Medical University, Taipei City, Taiwan); Dr ROHMAH, Ifitakhur (School of Nursing, Taipei Medical University, Taipei, Taiwan); Prof. RAHAYU, Tandiyo (Faculty of Sport Science, Universitas Negeri Semarang, Semarang, Indonesia); Dr SANTILLANA, Leo (Department of Physical Education, College of Education, Mindanao State University –Iligan Institute of Technology, Iligan City, Philippines); Mrs COLOBIO-ENGLATIERA, Brittany (Department of Physical Education, College of Education, Mindanao State University –Iligan Institute of Technology, Iligan City, Philippines); Dr PRATAMA, Rivan Saghita (Department of Sport Coaching Education, Faculty of Sports Science, Universitas Negeri Semarang, Indonesia); Prof. CHEN, Chenyi (Graduate Institute of Injury Prevention and Control, College of Public Health, Taipei Medical University, Taipei City, Taiwan)

**Presenter:** Mr WIDODO, Akhmad Fajri (Graduate Institute of Injury Prevention and Control, College of Public Health, Taipei Medical University, Taipei City, Taiwan)

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