Near-infrared spectroscopy reveals link between chronic physical activity and anterior frontal oxygenated hemoglobin in healthy young women

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**Abstract:** Cerebrovascular and cognitive functioning peak developmentally in young adults, yet recent evidence indicates they may benefit on these fronts from regular engagement in physical activity. In light of epidemiological trends for increasingly sedentary lifestyles and the importance of optimal cerebrovascular and cognitive functioning, here we investigated relationships between physical activity levels, anterior frontal hemodynamics, and cognitive performance in 52 healthy young women. Analyses positively linked chronic physical activity level (CPAL) with anterior frontal oxygenated hemoglobin and cognitive inhibitory control, indicating regular physical activity may lead to hemodynamic and cognitive benefits, even in a cohort at developmental peak. In addition, higher anterior frontal oxygenated hemoglobin was linked to better performance for the most difficult cognitive task. Given the importance of oxygen availability for cognitive functioning, the current discovery of a relationship with CPAL may provide important insight toward understanding exercise-cognition links.