Hypertension

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Meeting Abstract: Abstracts From the American Heart Association's Hypertension 2025 Scientific Sessions

Abstract TH193: Effects of moderate to vigorous intensity exercise on inflammatory and metabolic markers among healthy South Asian and white European men.

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Abstract

Background: Chronic low-grade inflammation plays a significant role in cardiovascular disease, with biomarkers such as IL-6, TNF-α, and CRP linked to an elevated risk. (Kaptoge et al., 2006; Ferreira et al., 2024). Regular physical activity reduces systemic inflammation, which is vital for cardiovascular health. (Petersen et al., 2005). Research on the inflammatory responses induced by acute exercise in South Asians, who are at higher risk for cardiometabolic diseases and are often underrepresented in studies, remains limited (Bhopal, 2015). This study explores the immediate effects of moderate-intensity exercise on inflammatory markers in young South Asian and white European men.

Method: The study involved 14 South Asian men and 12 white European men, aged 19 to 25, matched for age and BMI. All participants were confirmed to be non-smokers without no cardiovascular or metabolic diseases. Participants completed a VO2 peak test to establish their exercise intensity, cycled for 60 minutes at 65-70% of their maximum oxygen uptake (VO2 peak). Blood samples were collected before, immediately after, and one hour post-exercise to measure inflammatory markers, insulin, and glucose. Blood plasma levels of IL-6, TNF-alpha, sICAM, and CRP were quantified via ELISA.

Result: IL-6 levels increased significantly post-exercise for both groups ($p < .001$). TNF-α and sICAM levels remained unchanged in both groups. CRP levels rose significantly post-exercise, with South Asians having higher concentrations than White Europeans ($p = .048$). Insulin levels decreased significantly post-exercise for all participants ($p < .001$), with South Asians having higher overall insulin levels compared to White Europeans.($p = .044$). South Asians exhibited higher baseline glucose levels. However, both VO2 max and systolic blood pressure were significantly lower in South Asians compared to White Europeans ($p=.001$ and $p<.001$, respectively).

Conclusion: Post-exercise inflammatory and metabolic responses vary between South Asians and White Europeans. While both groups exhibit similar levels of inflammatory markers, such as IL-6 and TNF-α, South Asians have higher levels of C-reactive protein (CRP) and insulin.

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