

## **Correlation between Allostatic Load and Endothelial Function**

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### **ABSTRACT**

Allostasis refers to the body's innate adaptive ability to maintain homeostasis following exposure to acute and dynamic stressors. Chronic exposure to physical and/or psychological stress can lead to dysregulation of this stress response mechanism, leading to physiological dysfunction. The aggregate result of these stressors on the body is measured by calculating an individual's allostatic load (AL), which is a score that represents the magnitude of degenerative stress-related physiological changes present in the body by assessing a variety of pertinent biomarkers and physical measurements. **PURPOSE** - Our goal in this study was to examine the concept of allostatic overload as it relates to cardiovascular disease and attempt to establish a correlation between an individual's allostatic load and their endothelial function. We hypothesized that a higher allostatic load score would correlate with blunted endothelial function, measured through flow-mediated dilation. **METHODS** - To determine individual AL, we utilized a combination of metabolic (HbA1c, waist-to-hip ratio, and Body Mass Index (BMI)) and cardiovascular (systolic blood pressure, diastolic blood pressure, total cholesterol, HDL cholesterol, and total-to-HDL cholesterol ratio) measures. For each measure, a high-, moderate-, and low-risk threshold was determined, and individuals received scores based on their placement within these categories (1 point for high-risk, .5 points for moderate-risk, and 0 points for low risk). An individual's AL score was the summation of their score for each listed measure. Endothelial function was assessed via brachial artery flow-mediated dilation. Correlational analysis was run to compare an individual's AL scores to their FMD response. **RESULTS** - Our data indicates endothelial function was inversely correlated with AL (Pearson Correlation  $r = -.38$ ), suggesting a possible negative interaction between the two measures. **CONCLUSION** - These preliminary results suggest there is a possibility that allostatic load plays a role in negatively affecting endothelial function. However, more research is necessary to fully elucidate the relationship between allostatic load and endothelial function.