

13. SWACSM Abstract

The Effects of Exercise on Inflammatory Biomarkers over a 36-h Fast

AUSTIN F. DUERSCH, HUNTER CHAMBERLAIN, JACOB COLEMAN, LANDON S. DERU, AND BRUCE W. BAILEY

BYU Lifestyle Medicine Lab; Department of Exercise Sciences; Brigham Young University; Provo, UT

Category: Undergraduate

Advisor / Mentor: Bailey, Bruce (bailey.bruce@gmail.com)

ABSTRACT

Postprandial and diet-induced chronic inflammation has become a popular point of discussion over recent years in lifestyle medicine as studies have uncovered the effects that various inflammation markers have on chronic diseases including heart disease, diabetes mellitus, and arthritis. Interventions to help lower inflammation could help promote longevity and decrease risk of chronic diseases. **PURPOSE:** While previous research has shown various effects of fasting on inflammatory biomarkers, this study assessed the impact of an acute 36h fast with or without exercise at the beginning on inflammatory biomarkers (IL-6, C-peptide, GIP, MCP-1, and TNF-alpha). **METHODS:** Twenty healthy subjects (11 male, 9 female) completed two 36h fasts, with one protocol requiring the subject to complete a treadmill exercise session prior to fasting. Venipuncture was performed every 12 h and samples were later analyzed for inflammatory biomarkers. **RESULTS:** GIP decreased over the first 12 hours of the fast ($p < 0.0001$) and then remained low at 24 and 36 hours. Both MCP-1 and C-Peptide decreased over the first 24 hours ($p < .0001$ for both) of the fast and then leveled off from 24 to 36 hours ($p = 0.1883$, $p = 0.2798$, respectively). There was a significant difference in area under the curve between conditions for both C-Peptide and MCP-1. The difference in area under the curve for MCP-1 was 173 ± 61 pg/ml ($F = 7.97$, $p < .012$) and 1809 ± 791 pg/ml ($F = 5.23$, $p < .035$) for C-Peptide. There was no significant difference between conditions for IL-6, TNF- α , and GIP. **CONCLUSION:** Acute fasting reduces GIP, MCP-1 and C-peptide but most of the changes occurred during the first 24 hours of the fast. When exercise was combined with the 36h fast, levels of both C-Peptide and MCP-1 are significantly altered.