

A Daily Popcorn Snack Improves Cardiovascular Disease Risk Profile

V. Nguyen, D. Kawiecki, S. Pardo, T. Papadopoulos, L. Cooper, B. Lowther, J. Lowndes, T. Angelopoulos, J. Rippe

Rippe Lifestyle Institute • Celebration, Florida



INTRODUCTION

A healthy eating pattern can modify cardiovascular disease risk; thus, foods which contain specific nutrients to promote cardiovascular health are targeted as beneficial items to include in the diet. Among these are natural, whole foods as well as foods with added substances containing cholesterol-lowering properties. Moderate evidence exists to indicate that whole-grain intake may reduce the risk of cardiovascular disease and is associated with a lower body weight (USDA and HHS, DGAC 2010). Low-fat popcorn is a whole grain food supplying insoluble fiber and less fat than several commonly consumed grain or potato based snack foods.

PURPOSE

This study measured the effects of daily popcorn consumption on cardiovascular disease risk profile.

METHODS

One hundred eighty two overweight and obese subjects (BMI= 27-35) were randomly assigned to one of three groups: 1) Consumption of 100 kcal/d of 94% fat-free microwave popcorn (6 cups) while on a 500Kcal per day energy deficit diet (G1), 2) Consumption of 100 kcal/d of 94% fat-free microwave popcorn (6 cups) as part of a usual diet (G2) or 3) Consumption of usual diet without popcorn (G3). All groups received the same exercise prescription from an exercise physiologist. Clinical measures were taken in the fasted state prior to and after completion of the 12 week intervention. Weight was taken with a digital scale and body composition measured using DEXA.

RESULTS

Reductions in body mass (-12.84 ± 7.97 vs -2.70 ± 6.29 and -2.91 ± 5.89 lbs, $p < 0.05$) and total cholesterol (-16.87 ± 19.87 vs -7.00 ± 23.25 and -6.16 ± 21.56 mg/dl, $p < 0.05$) were greater in G1 compared to the other two groups. However, both popcorn groups observed greater reductions in LDL than the non popcorn group (-9.08 ± 18.26 and -4.08 ± 18.40 mg/dl, $p < 0.05$). Favorable changes were observed for systolic (115.65 ± 13.92 vs 110.76 ± 12.77 mmHg, $p < 0.05$) and diastolic blood pressure (74.39 ± 9.00 vs 72.18 ± 8.36 mmHg, $p < 0.05$), and triglycerides (141.80 ± 76.81 vs 128.83 ± 67.95 mg/dl, $p < 0.01$) in the entire cohort, but were unaffected by group assignment.

CONCLUSION

Popcorn can be successfully incorporated into the diet as a daily snack and is associated with significant improvements in cardiovascular risk profile. Because of its fiber content and low calorie-density, popcorn can serve as a satiating and healthy snack in a eating pattern which supports cardiovascular health.

Table 1. Baseline Subject Characteristics

Variable	Mean \pm SD
Weight (lbs)	199.17 \pm 26.63
Age (years)	52.04 \pm 9.31
BMI (kg/m ²)	31.92 \pm 2.84
Body Fat %	42.86 \pm 5.83
Waist Circumference (cm)	96.51 \pm 10.31
Total Cholesterol (mg/dL)	192.11 \pm 34.72
Triglycerides (mg/dL)	139.00 \pm 74.09
LDL Cholesterol (mg/dL)	113.5495 \pm 30.59
HDL Cholesterol (mg/dL)	52.66 \pm 13.49
CRP (mg/L)	3.01 \pm 2.24
Glucose (mg/dL)	82.50 \pm 15.98
Systolic Blood Pressure (mm Hg)	114.76 \pm 14.18
Diastolic Blood Pressure (mm Hg)	73.89 \pm 9.10

Figure 1. Changes in Body Mass

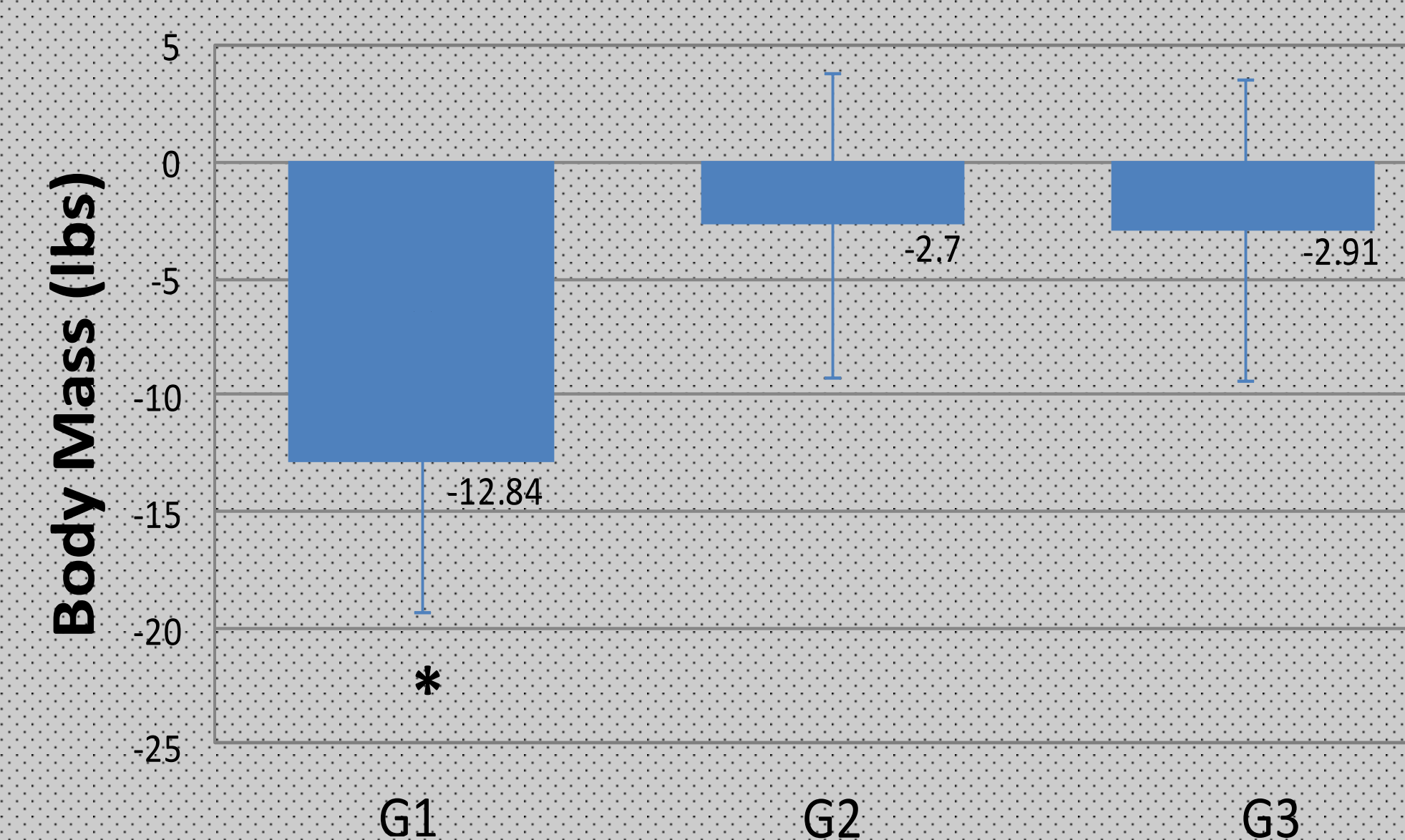


Figure 2. Changes in Total Cholesterol

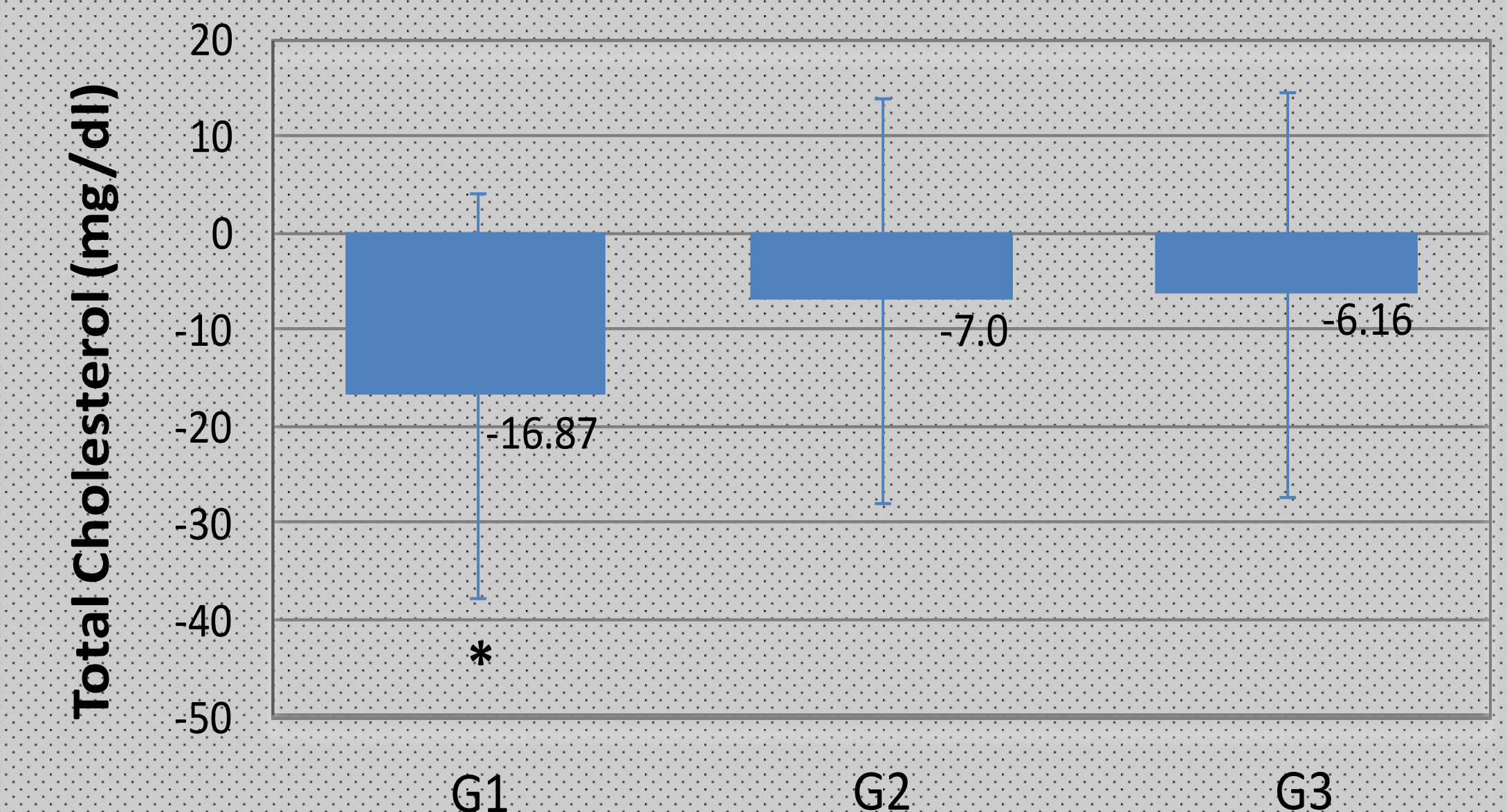


Figure 3. Changes in LDL Cholesterol

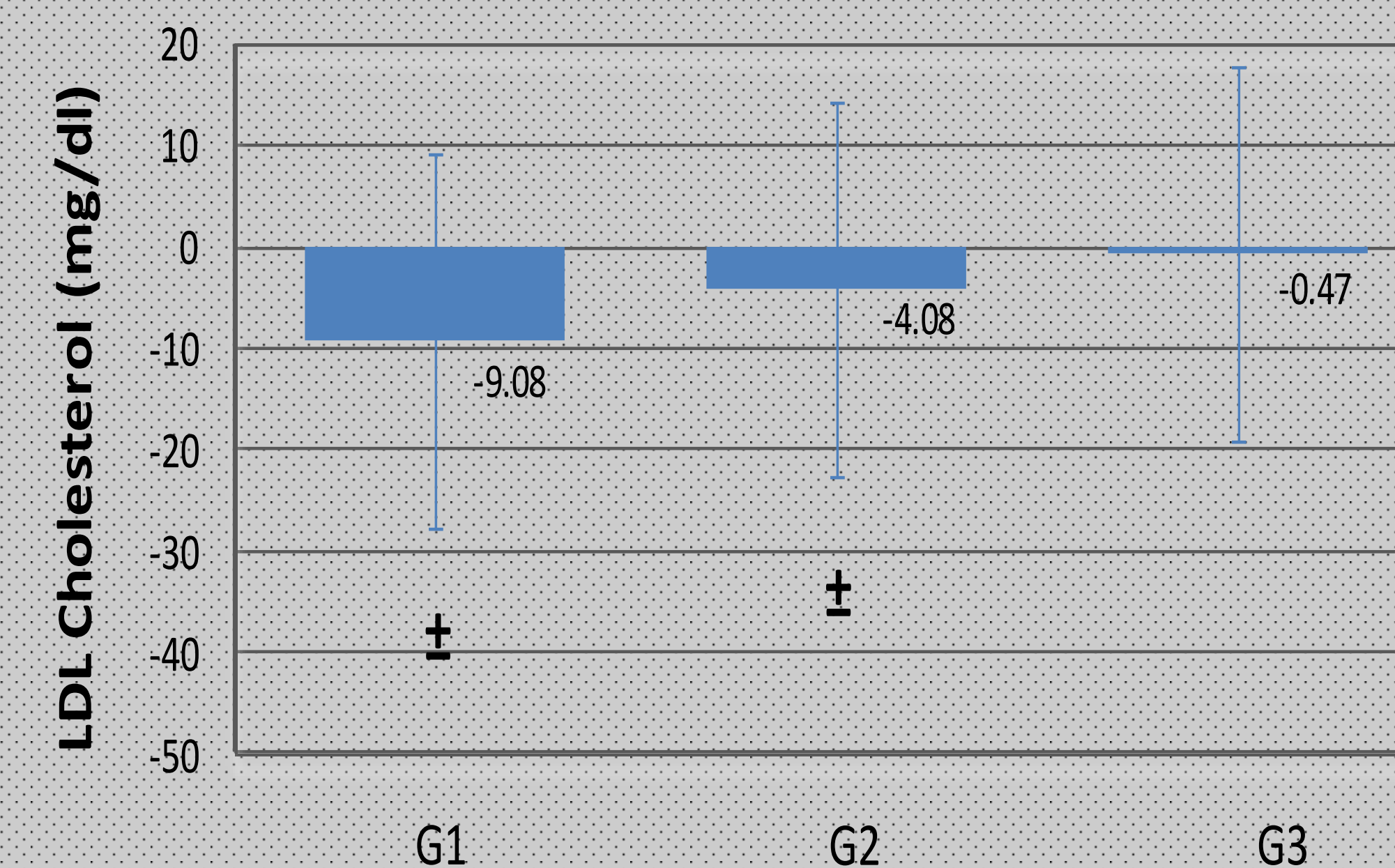
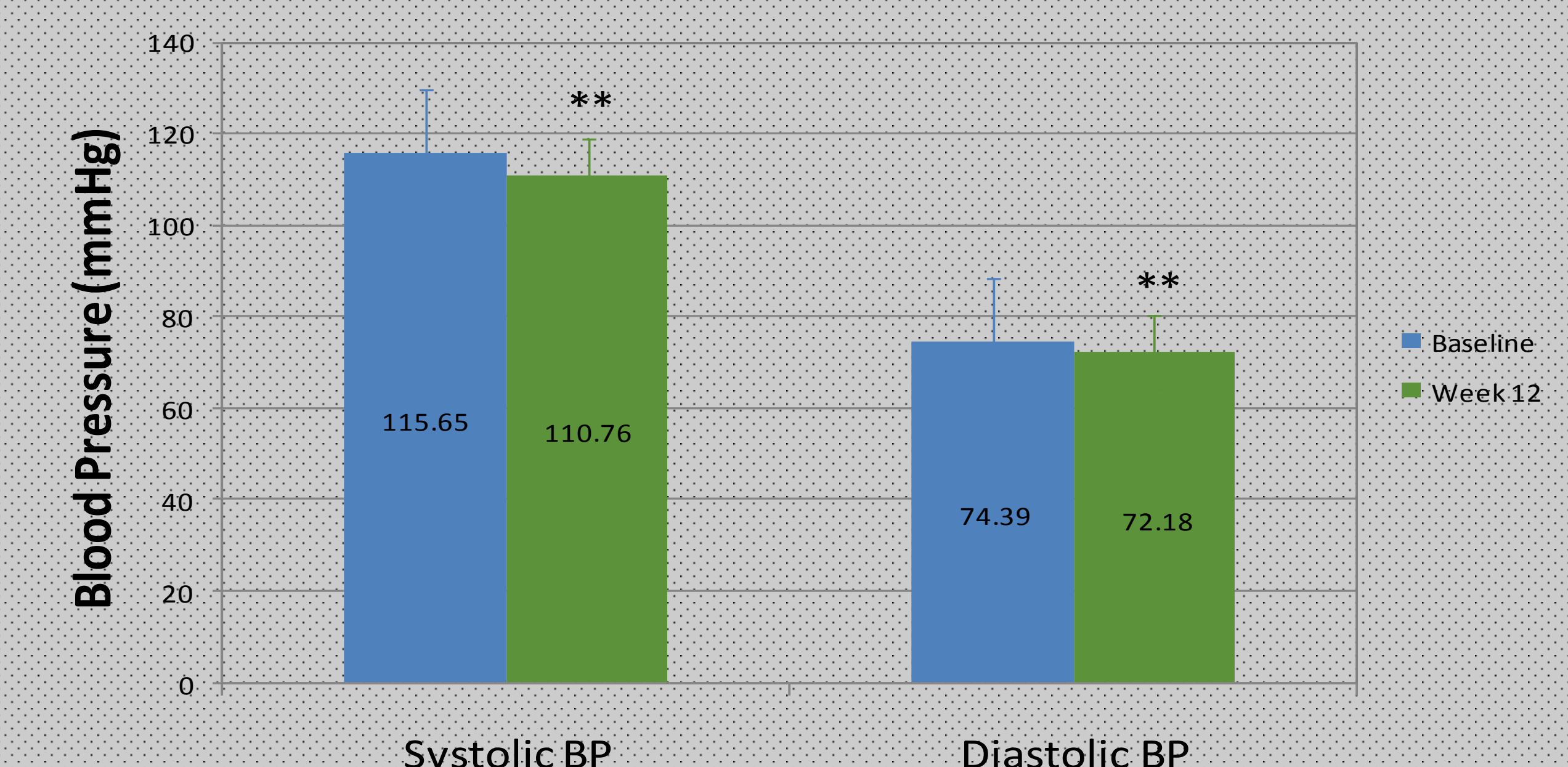


Figure 4. Changes in Blood Pressure All Groups



* Different than G2 and G3, $p < 0.05$
 \pm Different than G3, $p < 0.05$
 ** Different than baseline, $p < 0.05$