Egg Nutrition Center

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Protein Research

Layman DK, Evans E, Baum JI, Seyler J, Erickson DJ, Boileau RA. Dietary protein and exercise have additive effects on body composition during weight loss in adult women. *Human Nutrition and Metabolism* 2005;135:1903-10.

This study examined the interaction of 2 diets (high protein, reduced carbohydrates vs. low protein, high carbohydrates) with exercise on body composition and blood lipids in women (n = 48, ~46 y old, BMI = 33 kg/m2) during weight loss. The study was a 4-mo weight loss trial using a 2 x 2 block design (Diet x Exercise). Diets were equal in total energy (7.1 MJ/d) and lipids (~30% energy intake) but differed in protein content and the ratio of carbohydrate:protein at 1.6 g/(kg · d) and <1.5 (PRO group) vs. 0.8 g/(kg · d) and >3.5 (CHO group), respectively. Exercise comparisons were lifestyle activity (control) vs. a supervised exercise program (EX: 5 d/wk walking and 2 d/wk resistance training). Subjects in the PRO and PRO + EX groups lost more total weight and fat mass and tended to lose less lean mass (P = 0.10) than the CHO and CHO + EX groups. Exercise increased loss of body fat and preserved lean mass. The combined effects of diet and exercise were additive for improving body composition. Serum lipid profiles improved in all groups, but changes varied among diet treatments. Subjects in the CHO groups had larger reductions in total cholesterol and LDL cholesterol, whereas subjects in the PRO groups had greater reductions in triacylglycerol and maintained higher concentrations of HDL cholesterol. This study demonstrated that a diet with higher protein and reduced carbohydrates combined with exercise additively improved body composition during weight loss, whereas the effects on blood lipids differed between diet treatments.