

Original Article

# The effect of exercise intervention and caloric restricted low- or high-carbohydrate diet with high protein on body composition in a short-term weight loss program

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## ABSTRACT

### **[Aim]**

This study aimed to evaluate the effect of exercise intervention and caloric restricted carbohydrate content rate of diet with high protein on body composition in a short-term weight loss program.

### **[Methods]**

Eleven healthy undergraduate university students belonging to a sports club (7 men and 4 women) were recruited and randomly allocated into low- (LC; n = 6) or high- (HC; n = 5) carbohydrate diet groups. Target energy intake was 20 kcal · kg<sup>-1</sup> of ideal body weight and all food was provided in this one week short-term weight loss program. Protein intake was set at 1.4 to 1.5 g · day<sup>-1</sup> per kg body weight, and carbohydrate rate was set at 30% of total energy intake for the LC group and 50% for the HC group. Both groups conducted slow jogging twice a day for 40 min as an exercise intervention in addition to their other club activities. Body composition was determined using an isotope dilution method and total energy expenditure was estimated using the doubly labeled water method.

### **[Results]**

Both the LC and HC group significantly decreased body weight and fat mass compared with before the weight loss period (P<0.05). There were no significant changes in body weight (LC: -1.9 ± 1.0 kg; HC: -1.8 ± 1.0 kg) and fat mass (LC: -1.9 ± 1.0 kg; HC: -1.4 ± 0.9 kg) between the groups. Fat-free mass was not significantly changed during the weight loss program in either group. There was no difference between groups in energy intake and total energy expenditure.

### **[Conclusion]**

The results of this study may suggest that in this short-term weight loss program applying exercise and either a low- or high-carbohydrate diet with high protein has the same effect on body composition.

**Keywords:** high protein diet, low carbohydrate diet, high carbohydrate diet, rapid weight loss, macronutrient composition