

POSTER PRESENTATION

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Effectiveness of a dietary intervention on macronutrient intake, lean mass and strength gains in males participating in a supervised resistance training program

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Background

ISSN recommendations for individuals involved in a general fitness program are to ingest 25-35 kcal/kg/day consisting of 3-5 g/kg of carbohydrate and $\leq 30\%$ of total calories from fat. Additionally, the ISSN recommends that individuals engaged in resistance-training should ingest 1.4-2.0 g/kg/d of protein and to ingest some protein after exercise. This study examined whether nutritional counseling and post-workout supplementation affects dietary intake during training.

Methods

Eleven trained men (25 ± 5 yrs, 180 ± 6 cm, 82 ± 12 kg, 14 ± 3 %fat, training 7 ± 4 years, 3 ± 2 days/wk) were provided nutritional counseling by a dietitian prior to participating in a supervised resistance-training program (4 days/wk). A supplement containing 40g carbohydrate, 20g protein, and 3.5g fat was provided post-exercise. Diet records were obtained at 0, 3, 7, & 11 weeks while DEXA determined body composition, 1RM bench press, and 1RM squat measurements were obtained at 0, 4, 8, & 12 wks. Data were analyzed by ANOVA with repeated measures and are presented as means \pm standard deviations.

Results

Nutritional counseling did not change energy intake (30.9 ± 5.5 , 36.4 ± 9.6 , 35.0 ± 10.2 , 33.1 ± 6.1 kcal/kg/day; $p=0.20$) or fat intake (34 ± 10 , 34 ± 6 , 34 ± 6 , 34 ± 7 %; $p=0.97$). Protein intake significantly increased from baseline (1.7 ± 0.4 , 2.4 ± 0.8 , 2.3 ± 0.6 , 2.4 ± 0.5 g/kg; $p=0.002$) while carbohydrate

intake significantly decreased (3.5 ± 1.2 , 3.3 ± 0.6 , 2.8 ± 1.2 , 2.3 ± 0.9 g/kg; $p=0.02$); corresponding to an increase in percentage of protein (22 ± 6 , 26 ± 3 , 28 ± 10 , 29 ± 6 %; $p=0.03$) and a decrease in percentage of carbohydrates (45 ± 15 , 38 ± 8 , 31 ± 10 , 28 ± 9 %; $p=0.003$). After 4, 8 and 12 weeks, respectively, a significant increase in lean mass was observed (1.3 ± 1.7 , 2.1 ± 1.8 , 2.2 ± 2.1 kg; $p=0.001$) with no significant effect on body fat percentage (14.3 ± 2.7 , 15.0 ± 3.3 , 14.7 ± 3.5 , 15.1 ± 3.5 %; $p=0.34$). Bench press 1RM (-2 ± 6 , 3 ± 6 , 9 ± 5 %; $p=0.001$) and squat 1RM (14 ± 10 , 33 ± 14 , 43 ± 18 %; $p=0.001$) increased from baseline.

Conclusion

Nutritional counseling prior to engaging in a resistance-training program that included post exercise supplementation increased dietary protein intake and resulted in positive training adaptations despite a reduction in carbohydrate intake. Additional nutritional guidance may be necessary to ensure adequate carbohydrate intake particularly in athletes engaged in heavy training.

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