

POSTER PRESENTATION

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The effects of varying types of protein consumption on measures of strength in collegiate football players

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Background

To investigate the potential effects of three types of protein ingestion in conjunction with a controlled resistance training program utilizing Division III college male football players.

Methods

74 NCAA Division III male football players were matched according to weight and randomly assigned in a double blind manner into 4 groups to consume either 40 grams of a whey and casein protein blend (WC) (94.5 ± 21.8 kg, 19.6 ± 2.5 yrs, 180 ± 6 cm, 18.6 ± 8.9 %), whey protein (WP) (90.4 ± 15.9 kg, 19.6 ± 1.3 yrs, 177.8 ± 6.6 cm, 16.5 ± 6.7 %), casein protein (CC) (107.2 ± 14 kg, 19.7 ± 1.1 yrs, 182 ± 6 cm, 21.6 ± 7 %), or a glucose control (GC) (96.4 ± 18.1 kg, 19.7 ± 1.4 yrs, 180 ± 6 cm, 16 ± 5.1 %) post-exercise for eight weeks. In addition to the supplementation, subjects participated in a supervised 5-day per week linearly periodized training program. At 0 and 8-weeks, subjects underwent DEXA body composition analysis, 1RM strength, 40 yard dash, vertical jump, and 5-10-5 testing sessions. Data were analyzed using a 4 x 2 mixed factorial ANOVA. Follow-up one way ANOVA were used as a post-hoc measure with delta scores. All data is presented as mean ± SD changes from baseline after 60-days.

Results

No significant group x time interaction effects were observed among groups in changes in any performance variable ($p > 0.05$). However, significant time effect

($p < 0.05$) were observed in squat 1RM (WC: 18 ± 13.7 kg, WP: 31.6 ± 20.5 kg, CC: 23.6 ± 17.3 kg, GC: 25.7 ± 17.9 kg), bench press 1RM (WC: 10.3 ± 7.2 kg, WP: 16 ± 8.9 kg, CC: 9.9 ± 11.5 kg, GC: 11.6 ± 7.8 kg), power clean 1RM (WC: 8.1 ± 5.6 kg, WP: 6.9 ± 6.5 kg, CC: 3.4 ± 5.4 kg, GC: 5.7 ± 6.3 kg), 40 yard dash (WP: -0.05 ± 0.09 kg, CC: -0.06 ± 0.11 kg), vertical jump (WC: 2.2 ± 2.2 kg, WP: 1.3 ± 1.7 kg, GC: 1.5 ± 1.5 kg), and 5-10-5 (CC: -0.055 ± 1.0 kg, GC: -0.09 ± 0.08 kg) in all groups. In regards to body composition there were also significant ($p < 0.05$) time effects for fat mass, fat free mass, lean mass, and percent body fat. A significant group x time interaction was observed for fat mass where CC lost more fat than WP and GC (CC: -1.90 ± 1.7, WP: -0.64 ± 1.3, GC: -0.44 ± 1.3).

Conclusion

It has been concluded that eight weeks of supplementation with protein or carbohydrate, either whey or casein, might have a significant impact on muscular strength adaptations and body composition that occur with controlled resistance training. The resistance training protocol utilized resulted in increases in muscular strength and lean mass, with a decrease in body fat mass and percentage, indicating that the stimulus was sufficient enough to produce the desired adaptations in resistance trained, collegiate athletes. However there were no significant interactions between groups, suggesting that all forms of supplementation were similar in their ability to facilitate performance adaptations. Despite the lack of performance changes, casein protein appeared to facilitate the greatest fat loss when compared to whey protein or carbohydrate.

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