

POSTER PRESENTATION

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Impact of glycogen resynthesis on lean mass

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From The Eleventh International Society of Sports Nutrition (ISSN) Conference and Expo Clearwater Beach, FL, USA. 20-21 June 2014

Background

It has frequently been demonstrated that resistance training has a negative effect on muscle glycogen content. Additionally, the rate of resynthesis seems to be dependent upon the degree of depletion. However, the impact of glycogen resynthesis on lean mass in a resistance trained population consuming a very low carbohydrate diet has yet to be examined. This has important implications for athletic populations as body composition appears to be related to performance]. Therefore, the purpose of this study was to examine the effects of glycogen resynthesis on body composition in resistance trained individuals consuming a ketogenic diet.

Methods

Thirteen experienced resistance trained males volunteered to participate in this study (mean \pm SD, age: 23.5 ± 3.3 , weight: 187.6 ± 32.6) and were instructed to consume a ketogenic diet consisting of 5% carbohydrate, 25% protein, and 70% fat for eight weeks. Additionally, subjects were engaged in a monitored, periodized resistance training program for the duration of the study. On week nine, carbohydrates were gradually reintroduced to the diet at a rate of 1g/kg. This rate increased by 1g/kg at two day intervals for a total of 3/kg throughout the week. Body composition (Hologic Dual X-Ray Absorptiometry) and ultrasonography determined muscle thickness were measured at Week 0, 8, and 9. Consent to publish the results was obtained from all participants.

Results

Total Mass, LBM, and quadriceps thickness significantly increased ($p < .05$) from week 8 to week 9 by $4.81 \text{ kg} \pm 2.8$, $2.9 \text{ kg} \pm 2.1$, and $0.2 \pm 0.2 \text{ cm}$, respectively, meanwhile fat mass significantly decreased by $1.8 \text{ kg} \pm 1.3$.

Conclusion

The primary finding of this study is that the reintroduction of carbohydrate for one week in a depleted population significantly increases DXA determined lean body mass.

Published: 1 December 2014

doi:10.1186/1550-2783-11-S1-P43

Cite this article as: Ormes et al.: Impact of glycogen resynthesis on lean mass. *Journal of the International Society of Sports Nutrition* 2014 11(Suppl 1):P43.

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