

## TACSM Abstract

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### Effects of Pre- and Post-Exercise Protein vs. Carbohydrate Ingestion on Training Adaptations in Collegiate Female Athletes

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#### ABSTRACT

The role of nutrient timing both before and after daily training sessions is now a major part of the nutritional recommendations for athletes to maximize training adaptations. However, there still exists some questions on the ideal macronutrient selection for these pre- and post-workout meals. **PURPOSE:** To investigate the potential effects of protein vs. carbohydrate ingestion in collegiate female basketball players. **METHODS:** 14 ( $20.2 \pm 1.4$  years,  $169.4 \pm 5.8$  cm,  $67.5 \pm 6.1$  kg,  $27.1 \pm 4.4$  %BF) NCAA Division III female basketball players were matched by weight and randomly assigned in a double-blind manner to consume 24 grms whey protein (WP) or 24 grms maltodextrin (MD) pre- and post-exercise for eight weeks. Subjects participated in a supervised 4-day per week undulating periodized resistance and anaerobic training program. At 0 and 8-weeks, subjects underwent DEXA body composition analysis and upper- and lower-body 1RM strength, vertical jump, 5-10-5, and broad jump testing. Data were analyzed using repeated measures ANOVA ( $p \leq 0.05$ ) and are presented as mean  $\pm$  SD changes. **RESULTS:** Significant group  $\times$  time interaction effects were observed among groups for bench press 1RM ( $p = 0.043$ ) and DEXA lean mass ( $p = 0.026$ ) indicating that the WP group resulted in a more substantial training adaptations over the MD group. A significant time effect ( $p < 0.05$ ) was observed for DEXA %BF (%change:  $-4.87 \pm 4\%$ ), DEXA fat mass (%change:  $-4.33 \pm 5\%$ ), leg press 1RM (%change:  $13.57 \pm 7\%$ ), vertical jump (%change:  $9.95 \pm 6\%$ ), 5-10-5 (%change:  $-3.1 \pm 2\%$ ), and broad jump (%change:  $3.9 \pm 4\%$ ) suggesting that the stimulus of the training protocol was adequate to promote anaerobic physiological adaptations. **CONCLUSION:** In regards to nutrient timing, our results suggest that whey protein ingestion both pre- and post-training is a greater stimulus for increases in lean mass in female collegiate anaerobic athletes as compared to the ingestion of carbohydrates. This translated into a significant difference in upper body 1RM strength, however, despite significant training adaptations occurring over the 8 week trial, no significant differences occurred in lower body strength, vertical and broad jump, and 5-10-5 time between WP and MD groups.

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