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POSTER PRESENTATIONS ·THURSDAY, JULY 12, 2007
CRYSTAL BALLROOM · 5:00 pm – 6:00 pm
Supplements

EFFECTS OF GLUTAMINE-ARGININE SUPPLEMENTATION OR CREATINE ON MUSCULAR STRENGTH MARKERS OF OVERTRAINING IN R ESISTANCE TRAINED MALES: PRELIMINARY FINDINGS

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Overtraining is usually encountered after several days of intense training and is generally associated with a variety of performance decrements. In some cases, nutritional supplementation may reduce select markers typically hindered by overtraining factors and thus enhance or maintain performance outcomes. PURPOSE: To evaluate the effects of glutamine-arginine or creatine on performance markers of overtraining and muscular strength in resistance trained males. METHODS: Nine males (21.9±2.8 y, 179.1±6.0 cm, 84.01±12.86 kg) with lower body resistance training experience over the last 2 years performed a parallel back squat [1.5 times their body weight] to be included in the study. Subjects were randomly assigned in a double-blind manner to a glutamine-arginine (GLA), creatine monohydrate (CM) or dextrose placebo (PLC) group prior to beginning 3 separate supervised testing sessions and 8 supervised training sessions over 12 consecutive days. The day after baseline testing, all groups loaded their assigned supplement [5g/d 4x's] for four days prior to Day 1 training while maintaining this supplementation protocol for the duration of the study. Strength testing sessions consisted of 1RM protocols on the following: vertical jump (VJ), Wingate (W), Smith Squat (SS), leg press (LP), hack squat (HS) and leg extension (LE). Training days consisted of a total of 31 sets of lower body exercises at 70% 1RM [VJ 5 x 6, SS 10 x 10, LP 10 x 10, HS 3 x 10, LE 3 x 10]. RESULTS: Preliminary results indicated no significant differences between the groups during the three testing periods (P>0.05, VJ, W, SS, LP, HS, LE) and eight training sessions (P>0.05, VJ, SS, LP, HS, LE). However, significant differences (P<.05) were observed when combining the performance measures of the three groups from baseline (VJ: 26.11+ 4.13, HS: 666.67+155.08, W: 722.11+95.41) to subsequent testing sessions (VJ: 24.39+ 3.59, HS: 724.44+164.93, W: 673.33+96.40). Significant mean differences (P<.05) were also demonstrated during the training sessions the combined groups in the following measures from baseline (VJ: 25.89+ 3.90, SS: 133.16+15.98, LP: 127.41+17.26, HS: 129.22+18.73, LE: 119.56+19.53) to subsequent training sessions (VJ: 23.56+ 3.79, SS: 122.48+15.13, LP: 113.63+13.91, HS: 113.52+15.82, 4+16.43). CONCLUSIONS: Preliminary findings revealed no testing or training performments which may be generalized to nutritional supplement ingestion and initial homogeis levels of the subjects. PRACTICAL APPLICATION: While additional research is regarding overtraining status and resistance trained populations, the benefits of ingesting glutamine-arginine or creatine supplements cannot be overlooked as one viable method to maintain anaerobic performance during intense training regiments.

INCREASED MUSCULAR STRENGTH AND ENHANCED MUSCLE REPAIR WITH HYPERIMMUNE EGG PROTEIN SUPPLEMENTATION

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Hyperimmune egg protein (HIE) is a powdered, pure egg product derived from chicken hens immunized with more than 26 killed pathogens (e.g., Shigella, Staphyloeoecus, Escherichia coli, Salmonella, and Streptococcus) of human origin. Anecdotal evidence suggests that HIE supplementation improves performance and shortens recovery time after exercise. PURPOSE: To determine whether 10 d of oral HIE supplementation altered muscular strength and/or enhanced recovery from previous exercise. METHODS: With the use of a double-blind, balanced, matched-pairs study design 24 recreationally active males aged 23.6 ± 0.8 yrs, height 176 ± 2 cm, weight 69.2 ± 0.6 kg and 17.1 ± 1.5 % body fat were randomly assigned to either HIE (n=12) or an egg protein placebo (PLA) group. Participants abstained from their regular exercise routine for the duration of the study and were supplemented with 4.5 g•d^{-1} for 2 d, 9 g•d^{-1} for 2 d and 13.5 g•d^{-1} for 6 d. HIE and PLA supplements were identical in appearance and taste before and after mixing with 237 mL of low carbohydrate milk. On days 1, 8 and 10, participants performed 1RMs of supine bench press and back squat followed by maximal reps at 70% of the respective 1RM for each exercise. Muscle soreness was assessed 24-h after 1RM testing by the subject placing a mark on a 10 cm visual analog scale (0 = No Soreness, 10 = Extreme Soreness) after performing one unloaded push-up and back squat, respectively. A repeated measures ANCOVA with initial differences between groups serving as a covariate was used to determine significant main effects. Significant main effects were further explored using Tukey's HSD post-hoc test. Significance was set at p<0.05. RESULTS: Change in muscle soreness for the chest observed on Day 2 was significantly lower (p<0.05) between HIE and PLA vs. Day 1 (ΔHIE 55 ± 23%, ΔPLA 183 ± 54%). Change in muscular strength was significantly greater (p<0.05) between HIE and PLA on Day 8 (ΔHIE 2.8 ± 0.8 kg, ΔPLA 0.4 ± 0.6 kg) and Day 10 (ΔHIE 2.8 ± 0.8 kg, ΔPLA 0.6 ± 0.4 kg) versus Day 1. Change in muscular endurance was significantly greater (p<0.05) between HIE and PLA on Day 10 (ΔHIE 2 ± 1 reps, ΔPLA -1 ± 1 reps) versus Day 1 and Day 8 (ΔHIE 1 ± 1 reps, ΔPLA -2 ± 1 reps). CONCLUSIONS: These data suggest that oral supplementation of HIE for 10 d resulted in a significant increase in bench press strength and endurance, decreased muscle soreness, and enhanced muscle repair during recovery. However, the prospective mechanisms related to these performance enhancements, in response to HIE supplementation, remain to be identified. PRACTICAL APPLICATION: The data from this study indicate that hyperimmune egg protein is an effective protein-based supplement for increasing muscular strength and muscular endurance while minimizing muscular soreness apparently through enhancing muscle repair during the recovery process. Effects of long term utilization need to be identified.

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THE EFFECTS OF A POST-WORKOUT NUTRICEUTICAL DRINK ON POWER, INFLAMMATION, MUSCLE BREAKDOWN, AND OXIDATIVE STRESS IN COLLEGE FOOTBALL PLAYERS

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Football players walk a fine-line between optimal training and overtraining given the demanding nature of their training. Manipulating nutrient intake and timing has the potential to maximize the biochemical environment necessary to induce peak performance. PURPOSE: To examine the impact of supplementing the diet of college football players during summer conditioning with a whey protein-based recovery drink containing a proprietary nutriceutical blend (e.g., superoxide dismutase [SOD], CoQ10, beta glucans) on changes in inflammation, muscle breakdown, and oxidative stress in response to anaerobic training. METHODS: At the beginning (T1) and end (T2) of a 7-week training phase, Division I college football players (N=25) completed a 30s Wingate Anaerobic Test (WAnT) plus eight 10s intervals to examine peak power and biochemical responses. Blood samples were collected before and 0 and 60 min following the interval session for analysis of IL-6, CK, and 8-isoprostane (8-ISO). Blood lactate (LAC) was obtained before and 0, 5, and 10 min following the intervals. Athletes were randomly assigned to either an experimental group receiving the nutriceutical drink (EXP, n=13) or a control group receiving an isocaloric equivalent (CON, n=12). RESULTS: EXP had a significantly greater increase in peak power (1.9 +/- 0.5 vs. 0.1 +/- 0.5 W/kg, P<.05). RM MANOVA revealed a significant Test x Time x Group interaction (P<.05) for changes in IL-6, CK, and 8-iso. Follow-ups revealed significant Test x Group interactions for all variables (P<.02) and a significant Test x Time x Group interaction (P=.01) for IL-6. Across groups, all measures demonstrated an increase after the intervals. Contrasts revealed no significant differences between groups at T1 for any of the variables. At T2, there were significant differences in IL-6 between EXP and CON at 0 (3.2 +/- 0.6 vs. 6.1 +/- 0.6 pg/ml, P<.01) and 60 min post (3.1 +/- 0.7 vs. 6.6 +/- 0.8 pg/ml, P<.01), with CON having an elevated IL-6 response. CK differences between EXP and CON at T2 emerged at all time points, with CON having higher CK values (CK_rest = 270.7 +/- 101.4 vs. 646.7 +/- 105.6 U/L; CK_0post = 356.5 +/- 129.4 vs. 825.1 +/- 134.6 U/L; CK_60post = 310.7 +/- 95.5 vs. 676.2 +/- 99.4 U/L), P<.02. There were also differences in 8-ISO at all time points at T2, with CON having higher levels (8-ISO_rest = 25.3 +/- 6.1 vs. 50.8 +/- 6.3 pg/ml; 8-ISO_0post = 37.3 +/- 6.2 vs. 64.1 +/- 6.4 pg/ml; 8-ISO_60post = 35.9 +/- 7.9 vs. 65.4 +/- 8.2 pg/ml), P<.02. RM ANOVA revealed no significant group differences for LAC response, indicating similar intensity for both groups. CONCLUSIONS: Supplementing the diet of college football players with a protein, carbohydrate, and nutriceutical recovery drink has favorable effects on power and on the IL-6, CK, and 8-iso responses to training and high intensity WAnT intervals. Based on differences between groups that emerged at rest at T2, it appears that this supplement impacts both acute and chronic physiological responses. PRACTICAL IMPLICATIONS: The use of this supplement as a post-workout recovery aid may help the strength and conditioning professional maximize training responses in the strength athlete by helping to buffer the acute and chronic biochemical challenges to optimal recovery.

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