3724 Board #41

The Effect Of Using Electromyostimulation To Taekwondo Athletes' Brain Waves During PNF Stretching Methods

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(No relationships reported)

PURPOSE: The purpose of this study was to analyze the activity of brain waves depending on the different type of stretching exercise as a warm-up for Taekwondo competitions in order to find out the feasibility of using EMS during PNF-stretching method. We would like to see the difference between the stretching techniques used by Taekwondo athletes and the stretching methods using EMS.
METHODS: A total of three method of treatments were conducted to 8 elite Taekwondo athletes(Age: 25.87±0.99, Height: 185.75±11.01, Weight: 80.87±21.56) repeatedly in random order: PNF Stretching with electric stimulation(EMS+PNF), warm-up exercise with electric stimulation, and PNF stretching without electric stimulation. The EMS+PNF group's electrical treatment was 60 Hz, with five seconds of stimulation and five seconds of rest alternately. Exercise intensity is RPE 15-16 levels. The brain wave condition of all subjects were presented in comparison before and after(post-hoc) treatment procedures. We performed Two-way Repeated Anova test at the difference of the data between the before and after the program.
RESULTS: First, EMS part (M = 66.73, SD = 7.23), PNF part (M = 38.02, SD = 7.23), EMS during PNF stretching part (M = 59.33, SD = 7.23) were confirmed in Alpha value. So significant differences were found between warm-up exercise with EMS during PNF-stretching($p<.01$); EMS during PNF-stretching and PNF-stretching($p<.05$) in Alpha value. In addition, it showed significant increases in alpha value corresponding to duration of treatments($F=4.851$, $p=.009$). Second, significant differences between before and after were found in beta values($F=5.024$, $p=.026$). Third, significant differences were found between EMS (M=151.99, SD=14.93) and PNF-stretching(M=84.67, SD=14.93) in theta value($p<.01$). EMS showed higher value than PNF-stretching in theta wave.
CONCLUSIONS: This study was showed changes of an alpha wave, which reflects positive emotions, depending on presence of EMS. Thus, it can be considered as more effective method when applying EMS to conventional stretching which leads athletes to feel more effectively treated. The result of the increase in the beta wave was predicted about the difference between EMS stimulation and general stretching by reflecting the characteristics of the beta wave that is activated as cognitive processing occurs. Theta wave is activated when the influence and anxiety of a quiet environment are felt. We are guessed Player thinks that the effect of stretching is low and that the result is reflected when the traditional stretching is performed. Throughout this study, athletes can be expected to show better performance by using EMS during stretching exercise.
experimental schematic diagram
pre-test EEG ↓
EMS EMS+PNF Stretching PNF Stretching
↓
10 min rest (Between measurements)
↓
post-test EEG

3725 Board #42

The Effects Of Citrulline Malate Supplementation In Strength And Muscle Mass

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L-citrulline (CIT) is a non-essential amino acid, found abundantly in watermelon, which has the ability to indirectly increase nitric oxide production by increasing arginine levels. A combination and the acute use of CIT with malate (intermediate of the Krebs cycle) has shown interesting results in the sports science literature, but the chronic effect of citrulline malate (CM) in the scientific literature is still unclear.
PURPOSE: Investigate the chronic effects of citrulline malate supplementation in increasing strength and muscle mass in trained healthy adults.
METHODS: A randomized, double-blind, crossover, placebo clinical study. Twenty four (25.96 ± 4.7 years) healthy adult men were randomly divided into 2 groups; citrulline malate group (CM= 12; 82.4±10.7kgs) or placebo group (PL = 12; 82.11±10,9kgs). The CM group received a sachet containing 6g of citrulline malate + 15g of maltodextrin and the PL group 6g of non-essential amino acids (NAAE) + 15g of maltodextrin. Supplementation was performed for 28 days (4 weeks) and included a wash-out week. After this week, there was an exchange of supplements in both groups. Before and after each supplementation, body composition (body weight, fat mass and muscle mass) by plethysmography (*BodPod*), and repetition maximum test (1RM) in the bench press were performed. Statistical analysis was performed using the covariance analysis model for crossover experiments, considering a significance level $p<0.05$.
RESULTS: CM supplementation promoted an increase in total lean mass (67.28 ± 8.11kgs *vs* 67.77 ± 7.97kgs, $p<0.005$) in relation to placebo (67.83 ± 7.84kgs *vs* 67.43 ± 8.57kgs) (CM *vs* PL $p<0.001$), a decrease in total weight (CM 82.39 ± 10.72kgs *vs* 81.63 ± 9.98kgs and PL 82.11 ± 10.9kgs *vs* 82.08 ± 9.78kgs, CM *vs* PL $p<0.05$) and an increase in the final bench press (CM 37.95 ± 7.6kgs *vs* 41.55 ± 8.31kgs, $p<0.05$) in relation to placebo supplementation (38.26 ± 8.69kgs *vs* 40.08 ± 8.19kgs, $p<0.05$) (CM *vs* PL, $p<0.01$), regardless of the sequence in which the supplement was ingested.
CONCLUSION: Supplementation of CM for 4 weeks proved to be effective in improve body composition (decrease in total weight and increase lean mass) and increased strength, without showing adverse effects, indicating a viable strategy for practitioners of resistance exercise.

G-32 Free Communication/Poster - Interval Training

Saturday, May 30, 2020, 8:00 AM - 10:30 AM
Room: CC-Exhibit Hall

3736 Board #53 May 30 8:00 AM - 9:30 AM

Blood Flow Restriction Compared To High Intensity Interval Training On Body Composition And Tendon Width

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Blood flow restriction (BFR) is a low load exercise modality advocated to improve body composition.
PURPOSE: To compare BFR against high intensity interval training (HIIT) body-weight squats (BWS), and 80% 1RM squats (CON) in body composition and quadriceps tendon cross section area (QXS).