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BOOK OF ABSTRACTS

Edited by:
Balagué, N., Torrents, C., Vilanova, A., Cadeau, J., Tarragó, R., Tsolakidis, E.

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tional and international guidelines regarding the experimental use of animals. Eighteen male Wistar rats (with about 250 g) performed an aerobic training for 8 weeks in a treadmill, a control group without training was also used. At the end of this period the training efficiency was assessed. Blood was collected from the jugular vein, being all the animals sacrificed by anesthetic overdose after this. The soleus muscle was removed and stored for further analyses. To evaluate the soleus muscle fiber type a myosin-ATPase staining was performed. EPCs were determined on whole blood samples by flow cytometry using anti-CD45-, CD34-, CD133 and CD146 antibodies. The expression of the NOS isoforms was assessed by western-blotting using the antibodies against iNOS and cNOS (Santa Cruz). The serum VEGF concentration was quantified by an ELISA commercial kit (R & D systems). Results The results showed that the aerobic training increased the number of type I fibers and decreased the type II fibers number. In the soleus muscle these changes were associated with increased iNOS and principally cNOS. By using the biomarkers for EPCs in an undifferentiated state (anti-CD34+ and anti-CD133+) no differences were observed (related to control). However, the percentage of cells with biomarkers for the endothelial phenotype (anti-CD146+, anti-flk1+) decreased in the trained group. In addition, in comparison with controls an increase in the capillaries/fiber type ratio was ob-

lected, as well as an increase in the serum VEGF concentration. Discussion These results suggest that aerobic exercise promotes the exchange of type II to type I in fibers of muscle. This fiber exchange was associated to an increase in muscle neovascularization. Thus, the decrease in blood differentiated EPCs may indicate an increase of EPCs mobilization into skeletal muscle. This seems to be supported by the increase in muscle blood flow and C:F ratio, which could be regulated by nitric oxide and VEGF. Support: FCT, Strategic Project (Ref. Pest-C/SAU/UI3282/2011), and COMPETE.

PERCEIVED EXERTION DURING DIFFERENT SET CONFIGURATIONS IN BENCH PRESS AND ITS RELATIONSHIP WITH BLOOD PRESSURE AND POWER OUTPUT

UDC (a Coruña, Spain)
Introduction Interest in the use of ratings of perceived exertion to regulate resistance exercise has increased in recent years. OMNI-RES is a newly scale developed specifically to resistance exercise, and different studies have demonstrated that OMNI-RES is able to distinguish among protocols with different volumes and intensities (Lagally & Robertson, 2006). However, differences in the set design were not largely studied. The aim of the present study was to evaluate the differences between three different protocols with the same total volume and intensity, but with different set configuration. Methods 9 healthy subjects [24.0±1.5 y; 173.7±4 cm; 67.6±9.2 kg] performed 5 sets to failure with the load of 10RM and with 180 seconds between sets (failure session, FS). On separate days in a counterbalanced order, subjects performed the same volume but with the repetitions clustered in groups of 5 (i.e. 5/10); Sánchez-Medina et al., 2011) [SS] or with rests between each repetition [IS]. The total rest of the FS, 720 seconds, was distributed between each group of 5 repetitions or each repetition. OMNI-RES with memory anchoring procedures for the active muscles was obtained at the end of each set or coincident repetition. Systolic blood pressure (SBP) was measured at the same time than OMNI-RES and Power output (PO) was recorded for each repetition. Results Friedman’s test with Friedman post-hoc analysis was realized to compare OMNI-RES. Mean OMNI-RES was higher in FS in comparison with SS and IS [8.44±1.9; 6.66±0.84; 6.22±1.23, respectively; p<0.01]. In the OMNI-RES coincident after the first set of FS, FS was higher than IS (p>0.05). At the end of all sets, higher values for FS were also observed in comparison with SS and IS (p<0.01). Mean BP and PO were analysed using repeated measures ANOVA followed by post-hoc Bonferroni tests. Higher values in FS was observed for BP among protocols (p<0.05) but post-hoc analysis only showed a tendency between FS and SS [p=0.077] and between FS and IS (p=0.093). PO in FS was lower than both SS and IS (p<0.01). A positive correlation was observed between Mean OMNI-RES and Mean BP for FS (Spearman’s rho=0.69; p<0.05) whereas a negative correlation was found for IS (Spearman’s rho=-0.88; p<0.01). Discussion FS elicited a greater perceived exertion response than SS and IS while PO was lower in FS than in SS and IS. These results indicate that OMNI-RES could be used to monitor sessions with different set configuration. In addition, correlations between OMNI-RES and BP suggest that perceived exertion could be used to control BP responses in weight exercise. Surprisingly, different type of correlations were found in relationship with the set configuration. Further studies must be carried out to define the relationship between these two variables. Lagally KM & Robertson RJ (2006) J Strength Cond Res, 202, 252-6. Sánchez-Medina L & González-Badillo JJ (2011). Med Sci Sports Exerc, 43(9), 1725-34.

SEX AND AGE DIFFERENCES ON LIPOID PROFILE CHANGES AFTER INTERVENTION OF WEIGHT LOSS: THE PRONAF STUDY.

Romero Moraleda, B., Peinado, A.B., Morencos, E., Gutierrez, J., Benito, P.J., Calderón, F.J.
Faculty Physical Activity Science and Sport. Universidad Politécnica de Madrid
Introduction Cardiovascular disease (CVD) is markedly more common in men than in women (1, 2). In both sexes, CVD risk increases with age, but the increase is sharper in women (3). Clinical trials have already shown the relevant role of healthy habits as balance diet, no smoke and regular physical activity to protect and decrease CVD risk (4, 5). However, there are few studies that compare men and women on the response of lipid profile to a weight loss intervention. Objective The aim of this study was to compare men and women response of the lipid profile to a weight loss intervention. The secondary aim was to determine if aging influences also on the effect of weight loss on the lipid profile. Methods One hundred and eighty (96 women and 84 men) overweight and obese participants aged 18–50 years participated in a weight loss intervention program based on diet and exercise (PRONAF Study). The intervention period was 22 weeks (3 times/wk of training for 22 weeks and 2 weeks for pre and post evaluation). All subjects followed a hypocaloric diet (25-30% less energy intake than the daily energy expenditure estimated by accelerometer). Multivariate analysis of variance (MANOVA) was used to compare for sex and age and differences in baseline and post-training values. Bonferroni’s post-hoc test was employed to locate specific differences. To analyze the gender and age specific interaction the sample was classified by sex and age into responders or non-responders group. Results: There were significant differences between men and women to HDL levels. Women decreased HDL concentrations significantly. Men obtained a significant increase for HDL values. In baseline, LDL values showed differences between men and women (p=0.001). For TG concentrations there were significant differences between men and women in baseline and trend to significant in post- treatment (p=0.001; p=0.082). TC showed significant differences between men and women in baseline (p<0.01). After intervention, men and women showed a significant decrease to TC. Discussion When the response on lipid profile is compared by sex after weight loss intervention in our study, men achieved a better change than women. In the literature, we found reviews and epidemiological studies that try to explain the gender-specific differences to lipid profile abnormalities treatment. Due to fat distribution there is different response on lipid profile in men that in women (1, 6). In conclusion, men achieved a positive greater change on lipid profile than women. Moreover, the favorable lipid profile response decreases with increasing age.

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