

## The Effect of Two Methods of Upper and Lower Resistance Exercise Training on C-Reactive Protein, Interleukin-6 and Intracellular Adhesion Molecule-1 in Healthy Untrained Women

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**Abstract :** Inflammation by various mechanisms may cause atherosclerosis. Systemic circulating inflammatory markers such as C-reactive protein (CRP), pro-inflammatory cytokines such as Interleukin-6 (IL-6) and adhesion molecules like Intracellular Adhesion Molecule-1 (ICAM-1) are the predictors of cardiovascular diseases. Regarding the conflicting results about the effect of resistance exercise training on these inflammatory markers, the present study aimed to examine the effect of eight week different patterns of resistance exercise training on CRP, IL-6 and ICAM-1 levels in healthy untrained women. 40 volunteered and healthy untrained female university students (aged: 21+ 3 yr., Body Mass Index: 21.5+ 3.5 kg/m<sup>2</sup>) were selected purposefully and divided into three groups. At the end of training protocol and after subjects drop during the protocol in upper body exercise training (n=11), lower body (n=12) completed the eight week of training period although the control group (n=7) did anything. Blood samples gathered pre and post experimental period and CRP, IL-6 and ICAM-1 levels were evaluated using special laboratory kits, then the difference of pre and post values of each indices analyzed using one way Analysis of Variance ( $\alpha < 0.05$ ). The results of one way ANOVA for difference of pre and post values of CRP and ICAM-1 showed no significant changes due to the exercise training. But there were significant differences between groups about IL-6. Tukey post-hoc test indicated that there is significant difference between the differences of pre and post values of IL-6 between lower body exercise training group and control group, and eight weeks of lower body exercise training lead to significant changes in IL-6 values. There were no changes in anthropometric indices. The findings show that the different patterns of upper and lower body exercise training by involving the different amount of muscles altered the IL-6 values in lower body exercise training group probably because of engaging the bigger amount of muscles, but showed any significant changes about CRP and ICAM-1 probably due to intensity and duration of exercise or the lower levels of these markers at baseline of healthy people.

**Keywords :** C-reactive protein, interleukin-6, intracellular adhesion molecule-1, resistance training

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