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A 2-week combined high-intensity interval training regulates the serum cytokine concentrations in the absence of weight loss among sedentary young females

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Meta-inflammation is a pathological aspect of immunometabolism disturbances in obesity. It is promoted by inflammatory cytokine overexpression partially related to the toll-like receptor 4 pathway. Also, the immunoregulatory impacts of exercise training on inflammatory pathways has indicated in previous studies. In the present study, we assessed the direct effects of exercise (in the absence of body fat changes) on serum cytokine concentration by constructing a short-term exercise training intervention among overweight/obese subjects. Thirty inactive young females were allocated to either inactive group (IG, continued their inactive lifestyle) or active group (AG, participated in two-weeks combined high-intensity interval training). Before and after the intervention, serum cytokine concentration was measured using enzyme-linked immunosorbent assay. The body composition parameters did not significantly change in both groups. However, interleukine-10 levels were increased significantly in comparison with both pre-testing ($p = 0.008$) and IG ($p = 0.007$) values. Also, there was a significant decrease in tumor necrosis factor-α levels compared to IG ($p = 0.05$). No statistically significant changes were found in interferon-γ ($\Delta\% = -20.41$), pentraxin 3 ($\Delta\% = -13.57$), and fibroblast growth factor 21(FGF21) ($\Delta\% = 24.02$). Interestingly, FGF21 changes revealed a significant positive correlation with IL-10 ($r = 0.65$) and a significant negative correlation with IFN-γ ($r= 0.58$). Although our exercise training protocol reduced the TLR4 activities and induced an anti-inflammatory environment, this impact seems to be not related to body fat changes. The precise interventions are needed to evaluate the clinical implications of a crosstalk between skeletal muscle, liver, adipose tissue, and inflammatory response.

Biography

Nafiseh esmaeil has completed her PhD at the age of 35 years from Isfahn University. She works as an associate professor in Immunology department of Isfahan Medical School. She has published more than 50 papers in reputed journals and has been serving as an editorial board member of repute.The main focus of her research is related to inflammation and the effects of immunomodulatory agents on inflammation including exercise

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