

Angiogenetic effects of physical exercise in menopausal women

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Introduction: With menopause women face many changes that may lead to the loss of health related fitness, especially if sedentary. In particular, the estrogens deficiency affects the endothelial function thus increasing the incidence of the cardiovascular diseases. The cardio-protective effects of physical exercise is at least partially due to its ability to improve the health of arterial walls by influencing the endothelial function. Nonetheless, a direct angiogenetic of the physical exercise cannot be ruled out. VEGF is an important modulator of vascular growth but there are contrasting results about its response to physical exercise.

Aim of our study was to compare the effects of two aerobic training on the VEGF levels and on the angiogenesis in postmenopausal women.

Material and Methods. 34 Postmenopausal women underwent a 13 weeks training. In order to analyse the angiogenic effects, plasmatic VEGF levels were analysed before (T0) and after the training (T1). Moreover, the ability of the T0 and T1 serum to chemoattract endothelial cells and to induce them to form tubes was analyzed.

Results: All post-menopausal women increase VEGF ($P=0,014$) after training. In vitro tests evidenced that when cultured in presence of T1 serum, HUVEC cells improved their ability to form tube ($P<0,001$) as well as their calibre ($P<0,001$). Moreover, migration assays evidenced that after training the serum chemoattractive capacity increased significantly ($P<0,001$) capacity.

Conclusion: Our data evidence that aerobic training influence the arterial wall physiology also inducing a angiogenetic affect.

Keywords

Physical exercise, menopause, Vascular wall, VEGF.