**VEGF response to aerobic training in postmenopause: walking training vs nordic walking**

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Menopausal transition leads to increased risk of non-communicable chronic diseases, which are characterized by endothelial disruption and dysfunction. Aerobic physical exercise determines an increase of vascular endothelial growth factor (VEGF), a signal protein that stimulates angiogenesis, and recent studies suggest a direct correlation between exercise intensity and VEGF production (1). However, high intensity training is often not recommended for postmenopausal women as a result of cardiovascular and orthopaedic contraindications. The aim of the study was to determine if exercising at the same intensity (i.e. moderate intensity) but involving a more extended muscle mass might induce higher circulating levels of VEGF. Nordic Walking (NW), a form of physical activity where the active use of a pair of dedicated poles is added to regular walking, was compared to walking training (WT). Thirty postmenopausal women were enrolled in the study (57.93±3.55 years old) and randomly assigned to WT (n=15) and NW (n=15). Serum VEGF levels were determined by ELISA before and after exercise training, consisting in three workouts of 40-50 minutes for 13 weeks at intensity between 11 and 13 of a 15-category scale of the ratings of the perceived exertion. The only difference was the use of poles with appropriated technique in NW group. RM-ANOVA with repeated measure for the factor time revealed an effect for time ($P=.01$) and an interaction effect time x group ($P=.041$). Post-hoc analysis, consisting in a paired sample t-test for each group, showed that NW increased VEGF whereas WT showed only a tendency (WT: $T_0=39.68±2.90$ $T_1=40.22±2.56$, $P=.012$; NW: $T_0=38.22±1.60$ $T_1=42.52±5.97$, $P=.57$). In conclusion, independently from exercise intensity, NW seems to increase VEGF more efficiently than WT, probably as a result of a larger capillary bed actively involved by exercising muscles. This outcome should be taken in consideration when programming exercise training for postmenopausal women.

**References**


**Keywords**

VEGF; Nordic Walking; menopause.