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Are there gender specific differences in elderly regarding exercise treatment of cardiovascular diseases?

Authors:
A Lelbach¹, B Albert², A Koller², ¹Dr. Rose Private Hospital, V.I.P. Department - Budapest - Hungary, ²Semmelweis University - Budapest - Hungary,

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Introduction: Hypertension (HT) affects 25% of the world’s population and a major risk factor of cardiovascular diseases (CVD) (Carpio-Rivera, 2016). According to the Hungarian Hypertonia Register’s data (Kekes, 2009) the prevalence of HT under 55 years is lower in women than in men but in the population above 75 years it is the opposite. Based on the research of Kekes et al. to reach the optimal blood pressure in overweight elderly patients is especially difficult.

Applied methods: We have reviewed and critically analyzed the available literature regarding the exercise treatment and gender specific differences in hypertensive elderly in connection with the lowering of CVD risks.

Hypothesis: Both the Framingham-score and the Heart Score show lower risk of CVD for women. According to the American Heart Disease and Stroke Statistics (2009) above 70 years the risk and mortality of CVD is higher in elderly women, than in elderly men (Lloyd-Jones, 2009). The purpose of our analysis was to elucidate the possible reasons of the gender specific differences and notice the effects of physical activity for CV risk.

Results: In male and female spontaneously hypertensive rats (SHR) after 3 months of low-intensity aerobic training the mean arterial pressure (MAP) decreased 8-10 % in male SHR but there was no change in female SHR (Amaral, 2011). In human Turnbull et al. (2008) in one of the most detailed meta-analysis of HT in the world did not detect any gender specific difference through analizing the effect of drug therapy and CV risk. According to MESA (Vella CA, 2017) moderate-to-increased physical activity was effective to attenuate hypertension and obesity and related inflammatory parameters, however gender specific differences were not detectable. Bellasi et al. (2007) noticed Coronary Artery Calcium (CAC) to predict heart failure (HF) in both genders, but arterial stiffness predicts HF in men and not in women (Chester RC, 2017). According to Morita et al. (2013), after 6 months exercise training (40 min bicycle training average 2.5 times a week) the reduction of the systolic and diastolic blood pressure (SBP, DBP) was more significant in women (SBP-10.6 vs. -5.5 mmHg; DBP-6.2 vs. -3.3 mmHg; both P<0.05) than in men. A meta-analysis of Elizabeth Carpio-Rivera et al. (2016) showed that jogging rather than walking - reduces SBP and DBP (more a significant effect in males than in females). Whereas, a recent study (Lima, 2017) revealed that combination of jogging with aerob exercise is the most effective therapy to reduce fat mass.

Conclusion: At present there seems to be no evidence for gender specific differences of physical activity in the reduction of CVD in elderly. Most probable there could be an age group specific differences in the beneficial effect of physical activity on reducing CV risk, but more studies are necessary to reveal them. For physically active elderly fast walking and bicycling are effective treatments of CV risk factors.