Mucosal Immunity, Stress, Cognition and Functional Fitness in Sedentary and Active Elderly Men.

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ABSTRACT
Physical activity in the elderly has been shown to have positive effects on several chronic diseases and to improve immunity, mental health and cognition. Chronic stress as also been shown to have immuno-suppressive effects and to accelerate immunosenescence. Recently it as also been found that different types of exercise may affect cognition and dementia risk to different extents.
This cross-sectional study compared a group of 16 sedentary men with a mean age of 74,5±10,17 years old and a group of 17 men engaged in moderate regular exercise, mean age 69,99±6,36 years old, and aimed to identifying markers involved in maintaining immune and mental health in the elderly. Immune and physiological markers of stress (salivary IgA, CRP, cortisol, alpha-amylase, testosterone and DHEA), psychological variables (perceived stress, self-esteem, physical self, satisfaction with life) and functional fitness (using the Rikli and Jones test battery) were evaluated. A smaller sample of subjects (8 sedentary and 10 active) was also evaluated for cognitive function using the Vienna Test System Software (Schuhfried, Austria). Four different tests were used: evaluation of reaction time to a visual stimulus, evaluation of reaction time to sound, evaluation of different components of cognitive speed and evaluation of complex and multiple reactions to different stimuli. Statistical analysis was performed using the independent samples T-test and the bivariate Pearson's correlation for the association between variables. For the cognition tests variables the Mann-Whitney and Spearman tests were used.
Results showed that the active group had significantly better results in all components of functional fitness, including upper and lower strength and flexibility, agility and balance as well as aerobic resistance. Saliva levels of CRP and IgA concentration, but not IgA secretion rates, were lower in the active group. In the psychological variables, differences between groups were only found for Physical Self in the Physical Function domain. The active group performed better for cognitive speed and for complex and multiple reactions test. Correlations were found for the navel perimeter and salivary flow rate ($r=-0.32$, $p=0.02$) and CRP ($r=0.34$, $p=0.012$) and mean reaction time to sound ($r=-0.47$, $p=0.049$); for salivary cortisol and total perceived stress ($r=0.29$, $p=0.034$). Two components of the cognitive speed test (reaction time to choose and reaction time to visual search) negatively correlated with saliva flow rate ($r=-0.64$, $p=0.003$; $r=-0.52$, $p=0.02$). Several correlations were also found for aerobic resistance and the complex and multiple reactions test.
Inflammation and cognition were improved in active groups.

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