Comparative Th1/ Th2 balance of elderly women engaged in a program of resistance or aerobic exercise.

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In the last decades, the elderly population have been grow substantially in all continentes. Many chronic diseases, like a type 2 diabetes, obesity, cardiovascular disease and some types of câncer have the relative development risk increased parallel to aging. It is well-known the alterations that occur in the immune response with aging that can generate an imbalance of the immune response leading to a low-grade chronic inflammation. This change to a pro-inflammatory phenotype is defined as "inflammaging". $CD4^+$ Th cells are essential regulators of immune response and inflammatory diseases. These cells can be divided into various subsets, such as Th1, Th2, Th17 and Treg. Some studies have described the decrease in proliferative capacity of Th1 cells in elderly. The imbalance between Th1 and Th2 cells seems to play a role in the development of autoimmune and inflammatory diseases. Therefore, the aim of this study was to evaluate Th1 and Th2 responses and then verify Th1/ Th2 ratio in elderly women engaged in different exercise programs. Initially, 26 elderly women (75± 3.2 years) were selected and distributed into four groups: 1. sedentary (SED); 2. resistance training practitioners (RE); 3. aerobic exercise practitioners (AE); 4. resistance and aerobic exercise practitioners (REAE). Th1 and Th2 cell populations and ratio were assessed by flow cytometry. Th1 response showed a higher response in RE groups (RE, 16.7± 5.8% ; REAE 15.7± 4.7%) when compared with AE (12.5± 2.9%), and SED (12.9± 4.4%). Inversely, the Th2 response had a trend to decrease in exercise programs (SED, 10.4± 5.3; REAE, 9.2± 4.9; AE, 7.6± 3; RE, 4.9± 2.4 %). Finally, the Th1/ Th2 ratio was higher in RE (3.2± 1.4) versus REAE (2.2± 1.4), AE (1.9± 0.9) and SED (1.3± 0.3). In conclusion, increased Th1/Th2 ratio was due to a higher response of Th1 cells and lower response of Th2 cells. These findings suggest an improvement in Th1 response in elderly women engaged in exercise program, mainly in resistance exercise groups.

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