M9 Effects of physical exercise on markers of cellular immunosenescence: an updated systematic review.

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Abstract title

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Abstract body

Purpose: Immunosenescence (IS) is a dysregulation of the immune system occurring with aging that leads to an increased susceptibility to auto-immunity, infections and cancer. It is assumed that physical exercise (PE) may counteract IS. Unfortunately, no evidence for the effect of PE on senescent immune cells in the aged was available yet at the time of a review published in 2017 (Calcif Tissue Int 2017;100(2):193-215). We aimed to update this review since exercise immunology is a rapidly growing research domain and it is very likely that new evidence is now available in literature.

Methods: Literature databases PubMed and Web-of-Science were searched for relevant articles published since 2016 using identical search strategy and inclusion criteria as the original review, resulting in 804 and 1542 hits, respectively. Studies in both animals and humans were included.

Results: PE was shown to reduce senescent-prone T-lymphocytes whereas habitual physical activity showed no effect. Noteworthy was the higher number of studies describing the effect of PE on regulatory T-cells, however, some reporting PE-induced up-regulation and others down-regulation. Additionally, new studies were found confirming the increase of naïve and memory CD4+ T-lymphocytes and CD8+ T-lymphocytes and also dendritic cells after PE. PE-effects on NK cell counts remains inconclusive.

Conclusions: Recently published data show that PE can reduce senescent, and increase memory and naïve T-lymphocytes counts in older adults. Effects on NK-cells remain unclear. Our literature update provides new evidence to prescribe PE to counter IS in the aged.