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## Poster Presentation

### Effects of Physical Exercise on Neuroinflammation

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#### **Abstract**

Neuroinflammation is inflammation of the nervous tissue. It be initiated in response to infection, toxic metabolites, auto immunity, traumatic brain injury and variety of causes. Exercise is a promising mechanism of prevention and treatment for disease characterized by neuroinflammation. The benefits of exercise and physical activity (PA) are well known and have effects on function of the central nervous system (CNS), like improved mood and mental health, enhanced memory and cognitive function. PA is known to be an important preventive action in dementia and neurodegenerative disease, able to slow down progression and ameliorate disability. Previous research has established that long-term exercise reduce acute neuroinflammation resulting from traumatic brain injury. It is now well established from a variety of studies, that PA leads to decreased level of pro-inflammatory cytokines such as tumor necrosis factor (TNF)- $\alpha$  and interleukin (IL)-1 $\beta$  and increase in anti-inflammatory cytokines such as IL-10. These cytokines can cross the blood brain barrier (BBB), and can communicate between the CNS immune system and the peripheral. Exercise also induces IL-6 in the muscle tissue. IL-6 can suppress the function of pro-inflammatory cytokines such as TNF- $\alpha$  and IL-1 $\beta$ . Clinical studies indicate that leading a physical active life-style can reduce the risk of developing Alzheimer's disease (AD) and Parkinson's disease (PD). My main reason for choosing this topic is personal interest to exercise. The most obvious finding to emerge from this study is that exercise can lead to increased levels of neurotrophic factors, changes in the level of different cytokines and altered microglial functions in different parts of the brain. More research is needed to determine parameters influencing the effect of exercise, such as intensity, in order to find the optimal program.

**Keywords:** Neuroinflammation, Exercise, Cytokines, Anti-inflammatory

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