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Exercise Effects on Cognitive Impairments Through Altering Neuroinflammation

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Abstract

Cognitive impairments describe a state of diminished or impaired mental and/or intellectual function such as Alzheimer's disease, Huntington's disease and Parkinson's disease. As these disorders are more frequent in the elderly and due to the ageing of population, serious attention must be paid to these diseases. Exercise has shown to have preventive and therapeutic effects on cognitive impairments, both in animal models and in clinical studies with the elderly. Since exercise doesn't have the possible side effects of chemical drugs and also has good effects on patients' general health, it can be considered as a second choice to the usual drug-therapy or even an alternative way of treatment. Various exercise programs used in different studies have had different effects on patients' cognitive function; which could be the result of altered release of anti-inflammatory agents. Improved cognitive function may be the result of enhanced neurogenesis, increasing synaptic plasticity by directly affecting synaptic structure and the anti-inflammatory property of neurotrophic factors induced by exercise. Although several pathways for the anti-inflammatory effect of exercise have been suggested, there is no absolute mechanism for this property. Exercise has shown to alleviate cognitive impairments through modulating neuroinflammation and enhancing neurogenesis. By trying different exercise programs, we can find the best activities for each disease, thus maximizing the positive effects for each patient. Also in these studies, the samples are usually small and the effects of exercise without usual drugs have not been checked. To achieve this goal, further studies are needed to investigate different exercise programs in larger groups.

Keywords: Neuroinflammation, Exercise, Cognitive Impairments

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