

## The Need to Find the Personal Lifestyle Factor Counteracting Cognitive Decline in Normal Aging

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Rec date: Nov 28, 2016; Acc date: Dec 09, 2016; Pub date: Dec 12, 2016

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### Commentary

In the last years, much research focuses on the possible influence of physical activity on cognitive decline. Retrospective studies with healthy older people show that long lasting physical activity may reduce the risk for this decline. Prospective studies supply, in part, results arguing in favor of the efficacy of physical activity regarding cognition. One of the first meta-analysis was the one of Colcombe and Kramer [1]. They analyzed the effects of different trainings on executive, controlled, spatial, and speed tasks. The authors showed a higher improvement of the physical trainings groups compared to the control groups, especially in executive tasks. Until this study, on the one hand, few other meta-analyses were published, where the results were either interpreted with caution [2] or positive effects of a physical activity training compared to a control group could not be shown [3]. On the other hand, neuronal changes have been found related to physical activity, also in older people [4]. With this respect, an increase in the BDNF-factor and the insulin-like-growth-factor IGF-1 as well as neurogenesis may play a role.

But even though the influence of physical activity on cognitive decline is well investigated, this factor is not the only one relevant. Küster et al. [5] showed, in a controlled intervention study, that a cognitive improvement in older adults at risk of dementia is more positively associated with an active cognitive lifestyle as with a specific cognitive or physical training program. More specifically, adults with an active lifestyle as measured by their physical, cognitive and social activity, showed an improvement in cognitive performance after ten weeks compared to individuals with a less active lifestyle. Neither the cognitive nor the physical training in itself had an effect on the cognitive measurements. One reason for this result might be that lifestyle factors or leisure activities were pursued over a longer period of time than the applied training sessions. Furthermore, an active lifestyle includes the variety of physical, cognitive and social activities. Also, a stronger relationship of lifestyle with memory, but not with other cognitive functions like for example executive functions [5]. The relevance of lifestyle factors is in line with another meta-analysis [6]

showing that cognitively stimulating leisure activities may contribute to a reduced risk of cognitive impairment in later life. Furthermore, some studies show the beneficial effect of music training for cognitive improvement in older adults: Learning to play the piano and to read music improved the executive functions in older adults [7].

Having these results in mind the claim to be more physically active is important due to its positive effect on the body. Concerning the mind and brain, physical activity is not the only factor which has the potential to improve cognitive performance. In our opinion, more sophisticated studies, which also consider the preference in leisure-time activity, have to be conducted.

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