

## **Effects of sportive dance training compared to endurance and strength training on cognitive performance in old age – A longitudinal study on the prevention of memory loss**

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Physical and cognitive training have proved to be beneficial methods for positively influencing age-related structural and functional changes in the brain. We examined whether repetitive physical exercises differ from alternating movement patterns in terms of their effect on memory performance in seniors.

In a longitudinal study of 17 participants aged 67 to 80 years data were collected before the start of training, after 6 months, 18 months and 5 years of regular training. The memory performance of 8 dancers and 9 active controls was determined with the Verbal Learning and Memory Test.

Significant improvements occurred at the earliest after 18 months of regular training. Dancers improved in learning performance, retrieval performance of the interference list and corrected recognition. In addition, there are tendential enhancements in total learning performance and retrieval performance of the learning list after time delay. Active controls improved in retrieval performance of the interference list, retrieval performance of the learning list after interference and after time delay.

Both groups were able to delay degenerative changes in memory performance over a time period of 5 years demonstrating improvements in 3 parameters each and maintenance in the remaining parameters of the VLMT. As a result, it could be verified that regular physical activity can prevent memory loss in older age. However, constant cognitive and motor learning seemed to be slightly superior to engaging in repetitive physical exercises in order to prevent memory loss. It has a promising potential to counteract age-related cognitive decline and prevent neurodegenerative diseases. Due to neuroplasticity, it is possible to improve memory into old age. An intervention period of 6 months is not sufficient to detect an increase in cognitive performance. Only a long-term physically active lifestyle can lead to an enhancement of memory performance in old age and thus to an improved quality of life.