

Description for the general public:

In the recent years, a rapid increase in the elderly population has been observed. Improving living conditions and health care are the reason of systematic lengthening of life expectancy. Unfortunately, a burden of a multitude of chronic diseases is associated with age; these include cognitive disorders. It is estimated that cognitive impairment may affect more than 40% of population older than 60 years. Unfortunately, the mechanisms underlying the onset of age-associated deteriorations in the brain are unknown.

In addition, many modifiable risk factors such as unhealthy lifestyle and cardiovascular and metabolic diseases precipitate cognitive decline. There is experimental evidence that management of cardiovascular diseases and diabetes, healthy lifestyle and cognitive training reduce the risk of MCI and dementia. In addition, the relationship between the level of physical activity and cognitive functions are highly investigated. Despite several studies indicating that regular physical activity prevents cognitive decline, the exact needed exertion remains, however, unknown.

Our study will consist of two parts. First (MOBILE) will aim at the assessment whether the (subjective) declaration regarding own physical activity is reliable under different circumstances and whether mobile applications are helpful in increasing compliance to the recommended levels. The second part of the study (PA PROTECT) will be a prospective randomized controlled trial. In this part of the project we will be assessed the influence of an increase in daily physical activity for the prevention of cognitive decline, sustaining brain volumes and maintaining healthy levels of molecules indicating good general health. In addition, we would like to test the usefulness of mobile applications in increasing compliance to the recommended levels of physical activity. We seek to establish thresholds for physical activity intensity and frequency to be used in preparation of novel physical activity guidelines for protecting against cognitive decline in high risk adults.

We expect that our proposed intervention study will produce exact values for physical activity intensity required to protect against cognitive decline in older adults. The expected findings will enable us to construct first dedicated physical activity guidelines for cognitive impairment in individuals at risk. Demonstration of the usefulness of mobile applications in increasing compliance to the recommended physical activity would also have a considerable potential of entering clinical practice.