Reasoning of dissertation topic and competency of potential supervisor for admission into LSU biology doctoral studies with a participation of Tartu university 2024

Area of research (title and code)	Biomedical sciences B000
Field of research (title and code)	Biology 01B
Topic of research	Health promotion, Public health
Institution	Lithuanian sports university

Potential supervisor

Pedagogical and scientific degree	**Name, surname**	**Academic position**
Assoc. prof. dr.	Vida Janina Česnaitienė	Assoc. Prof.
Co-supervisor Prof. Dr.	Oron Levin	Prof.

Short reasoning of proposed dissertation topic

Title
Short and long-term effects of various durations resistance training on cognitive function in individuals with MCI
Short research description (including aims and objectives) (maximum 1500 characters). During normal aging, the brain undergoes both structural and functional changes that lead to cognitive decline in later life [1;2]. The prevalence of mild cognitive impairment (MCI) increases with age, increasing the risk of developing dementia. Lifestyle factors can either reduce or increase a person's risk of developing dementia. In some populations, dementia is already being delayed by years, while in others, the number of people with dementia has increased. The Lancet Dementia Prevention Commission has identified key interventions to prevent one third of dementia cases, including hypertension control, exercise, social engagement, smoking cessation, hearing support, and management of depression, diabetes, and obesity [3]. Building on previous projects and further research, the short- and long-term effects of strength training of varying duration on cognitive function in individuals at high risk of developing MCI will be assessed. The aim of the study is to investigate whether strength training can delay the risk of progression from MCI to dementia and to identify physical and psychosocial factors that may predict a higher risk of further cognitive decline in people with MCI. A comprehensive study that includes indicators such as physical capacity, blood parameters, brain health, the interaction of motor and cognitive functions, lifestyle and the incidence of chronic non-communicable diseases will help to reveal the impact of strength training on the development of cognitive decline in people with MCI. **References:** 1. Harada, C. N., Love, M. C. N., & Triebel, K. (2013). Normal cognitive aging. *Clinics in geriatric medicine*, *29*(4), 737. 2. Beheshti, I., Nugent, S., Potvin, O., & Duchesne, S. (2019). Bias-adjustment in neuroimaging-based brain age frameworks: A robust scheme. *NeuroImage: Clinical*, *24*, 102063. 3. Livingston, G., Sommerlad, A., Orgeta, V., Costafreda, S. G., Huntley, J., Ames, D., ... & Mukadam, N. (2017). Dementia prevention, intervention, and care. *The lancet*, *390*(10113), 2673-2734.