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Title: Cognitive and physical training in normal aging: a behavioral and neurophysiological study.

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Abstract (300 word limit)

Statement of the Problem: Facing a growing aging population, we focused on normal aging, and we wondered if we can attenuate and control its impact on cognition. We know that aging impacts working memory, speed processing and executive functions. The STAC model explains the impact of aging on the brain. This model says that as we age, there is an adaptation and a reorganization of brain functioning. As we age, we scaffold new compensatory networks. What is particularely relevant is that this model takes into consideration cognitive intervention, and this is important, because today there no pharmacological mean to counteract brain degeneration. We know that cognitive and physical training improve and support cognitive functions, and delay neurodegenerative processes. There are benefits from either cognitive and physical training. We wondered if there would be any interest to combine these two aspects in one training intervention. The aim of this research is to evaluate the contribution of physical activity to cognitive training in term of impact on cognition.

Methodology & Theoretical Orientation: An inter-subject study was designed to evaluate the impact of multiple interventions. There were 5 groups: Cognitive training, Physical training, Cognitive and Physical training, Active control group, Passive control group. Behavioral and neurophysiological measures (EEG) were used to investigate the impact of cognitive and physical training on the aging brain.

Findings: Cognitive and cognitive-and-physical trainings showed benefits, that look greater depending on the group. Speed processing was better improved in the cognitive-and-physical training group, whereas updating in working memory was better improved in the cognitive training group.

Conclusion & Significance: There is a beginning of a demarcation between the two types of training. Physical aspect seems to provide a general improvement of speed processing, whereas cognitive aspect seems to bring improvement of answer's quality. We are currently collecting more datas for this study.

Image

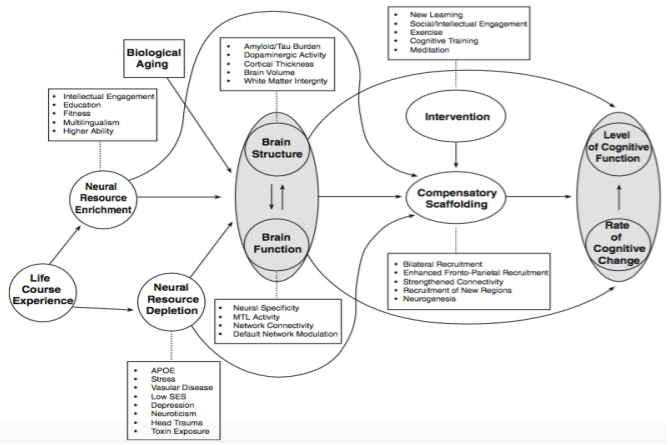


Figure 1 - STAC-r – Scaffolding Theory of Aging and Cognition revised-version

Recent Publications:

1. Berchicci, M., Lucci, G., & Di Russo, F. (2013). Benefits of Physical Exercise on the Aging Brain: The Role of the Prefrontal Cortex. The Journals of Gerontology: Series A, 68(11), 1337–1341.
2. Lee, Y., Wu, C., Teng, C., Hsu, W., Chang, K., & Chen, P. (2016). Evolving methods to combine cognitive and physical training for individuals with mild cognitive impairment: study protocol for a randomized controlled study. Trials, 17, 526.
3. Rabipour, S., & Davidson, P. S. R. (2015). Do you believe in brain training? A questionnaire about expectations of computerised cognitive training. Behavioural Brain Research.
4. Reuter-Lorenz, P. A., & Park, D. C. (2014). How Does it STAC Up? Revisiting the Scaffolding Theory of Aging and Cognition. Neuropsychology Review, 24(3), 355–370.
5. Theill, N., Schumacher, V., Adelsberger, R., Martin, M., & Jäncke, L. (2013). Effects of simultaneously performed cognitive and physical training in older adults. BMC Neuroscience, 14, 103.



Biography (150 word limit)

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Notes/Comments: