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Are Music Lessons a Fountain of Youth?

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This presentation concerns recent research that demonstrates that elderly individuals who take piano lessons for as short a time as a year show neuroplastic changes in certain cognitive areas of the brain, building cognitive reserve and delaying the aging process.

I have begun a series of posts on my blog site, The Musician's Brain, under the title "Fountain of Youth" that discuss the cognitive advantages of studying a musical instrument for both children and adults, and how the cognitive reserve built through the study of music delays cognitive decline in the elderly. These posts will go into greater detail than it is possible to do in the conference presentation. The second in the series concerns other activities, such as art, that develop cognitive reserve and delay aging. They can be found under "cognitive reserve" in the categories column on The Musician's Brain blog page.

For links to blog posts having to do with the cognitive advantages for children of studying music, click on The Musician's Brain in the menu, go to "Categories" in the R.H. column and click on "Benefits of studying music" and "Music Cognition."

Also:

Book

Svard, Lois. *The Musical Brain: What Students, Teachers, and Performers Need to Know.* Oxford University Press, 2023. (The 10th chapter in this book, "Does Music Really Make You Smarter?," discusses in detail the cognitive advantages of studying music.)

A collection of articles from Science Daily that may be of interest:

Music may bring health benefits for older adults, poll suggests, February 7, 2024

Playing an instrument linked to better brain health in older adults, January 29, 2024

How music can prevent cognitive decline, April 17, 2023

Just a few years of early musical training benefits the brain later in life, November 5, 2013

Research articles

With the exception of the Román-Caballero article, all the articles below concern the Hannover-Geneva study discussed in the presentation. All are open access with the exception of the Mack article.

James, Clara E., Eckart Altenmüller, Matthias Kliegel, et al. "Train the Brain with Music (TBM): Brain Plasticity and Cognitive Benefits Induced by Musical Training in Elderly People in Germany and Switzerland, a Study Protocol for an RCT Comparing Musical Instrumental Practice to Sensitization to Music." *BMC Geriatrics* 20, no. 418 (2020): https://doi.org/10.1186/s12877-020-01761-y.

Jünemann, Kristin, Anna Engels, Damien Marie, et al. "Increased Functional Connectivity in the Right Dorsal Auditory Stream After a Full Year of Piano Training in Healthy Older Adults." *Scientific Reports* 13, no. 19993 (2023): https://doi.org/10.1038/s41598-023-46513-1.

Mack, Melanie, Damien Marie, Florian Worschech, et al. "Effects of a 1-Year Piano Intervention on Cognitive Flexibility in Older Adults." *Psychology and Aging* 40, no. 2 (2024): https://dx.doi.org/10.1037/pag0000871

Marie, Damien, Cécile A. H. Müller, Eckart Altenmüller, et al. "Music Interventions in 132 Healthy Older Adults Enhance Cerebellar Grey Matter and Auditory Working Memory, Despite General Brain Atrophy." *Neuroimage:Reports* 3, no. 2 (2023): https://doi.org/10.1016/j.ynirp.2023.100166.

Román-Caballero, R, Arnedo, M, Triviño, M., Lupiáñez, J. (2018). "Musical practice as an enhancer of cognitive function in healthy aging – A systematic review and meta-analysis." *PLoS ONE* 13(11): e207957. https://doi.org/10.1371/journal.pone.0207957

Worschech, Florian, Damien Marie, Kristin Jünemann, et al. "Improved Speech in Noise Perception in the Elderly After 6 Months of Musical Instruction." *Frontiers in Neuroscience* 15 (2021): https://doi.org/10.3389/fnins.2021.696240.

Worschech, Florian, Damien Marie, Christopher Sinke, et al. "Quality of Life in Older Adults is Enhanced by Piano Practice: Results from a Randomized Controlled Trial." *Annals of the New York Academy of Sciences* (2025): 1-16. https://doi.org/10.1111/nyas.15397.