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## **Musical training found to change brain anatomy, function**

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Courtesy of the Society for Neuroscience  
and World Science staff

**Thorough musical training affects the structure and function of different brain regions, and does so more profoundly than previously thought, according to new studies.**

**The findings suggest that the training influences how those regions communicate during the creation of music, and how the brain interprets and integrates sensory information. The results, from three research groups, were presented at the annual meeting of the Society for Neuroscience in San Diego this week.**

**Researchers found that musicians have an enhanced ability to integrate information from hearing, touch, and sight. Starting training before the age of seven has the greatest impact, according to a separate study. A third found that systematic training shapes brain circuits involved in musical improvisation, leading to less reliance on working memory and more extensive connectivity within the brain.**

**Some of the brain changes that occur with musical training reflect the automation of tasks—much as one would recite a multiplication table—and the acquisition of very specific sensorimotor and cognitive skills required for music, scientists said.**

**“Playing a musical instrument is a multi-sensory and motor experience that creates emotions and motions—from finger tapping to dancing—and engages pleasure and reward systems in the brain. It has the potential to change brain function and structure when done over a long period,” said Gottfried Schlaug of Harvard Medical School and Beth Israel Deaconess Medical Center in Cambridge, Mass., who moderated a press conference on the findings Nov. 12.**

**“As today’s findings show, intense musical training generates new processes within the brain, at different stages of life, and with a range of impacts on creativity, cognition, and learning,” added Schlaug, an expert on music, brain imaging and brain plasticity, or changeability.**