Title: “How Music Strengthens the Brain”
Host: Dale Connelly
Specialist: Charles J. Limb, M.D.
   Associate Professor, Department of Otolaryngology-Head and Neck Surgery;
   Faculty, Peabody Conservatory of Music;
   Editor-in-Chief, Trends in Amplification

Dale: “From the Johns Hopkins University Brain Science Institute”

Dr. Limb: “In the formative years of childhood when you're listening to music and you're sort of paying attention to how sound is coming in, your brain is being affected in a way that could be permanent. So, music may be more powerful in some ways than we had imagined, not only for someone who studies it as a dedicated skill or craft, but even someone who studies it at an amateur or hobby level.”

Dale: “Charles Limb is a professor at Johns Hopkins University and a scientist who studies music and the brain. According to a recent study, people who take music lessons when they're young process speech much faster when they're older—as compared to people who didn’t study music.

Today on Brain Talk: how music strengthens the brain, especially when we're young.”

Dr. Limb: “If you emphasize complex auditory training when you are a child through the use of music you can stave off or prevent some of these cognitive declines that are associated with aging. To me that’s a remarkable thing about what music can do for the brain.”

Dale: “‘Music’, says Dr. Limb, ‘is a very potent stimulator of the brain for anyone at any age.’”

Dr. Limb: “Meaning that if you put someone in a functional MRI and you play music for them or you have them play music, which is an even more complex task, the entire brain, meaning all sensory motor capacities, is lighting up, it’s a phenomenal way to engage the brain. In fact I do not know if there are any stimuli that engage the brain to that extent in a purely sensory way, it is an extraordinary thing.”

Dale: “Dr. Limb says ‘listening to music or playing or learning music is like a healthy workout for the brain, especially for young people whose brains are developing at a rapid rate.’”

Dr. Limb: “The idea that sound alone can stimulate areas of the brain that are not just linked to sound processing, but also to consciousness, to co-ordination, to even vision processing, to sensory system that have nothing to do with music per se, suggests to us that music is a way to engage the brain at a level that is not commonly seen in normal daily activities.”

Dale: “Dr. Limb says ‘studies show that musicians process sound in a different way than non-musicians.’”
**Dr. Limb:** “In every study I have seen, if you do a hearing test on a non-musician and a musician the tests are the same meaning they do not have superhuman ears. But what they do have is a much better capacity to interpret and to pay attention to what they’re hearing; maybe their ability to listen is better than most people’s ability. So it is not just about hearing, it is about hearing and then listening as well, comprehending.”

**Dale:** “Perhaps most importantly, says Dr. Limb, ‘music helps develop a brain that can think creatively.’”

**Dr. Limb:** “I don’t know if there is a capacity in the human cognitive function that’s more important than the capacity to be creative, because this is the direct capacity that leads to innovation, leads to problem solving, leads to forward thinking. To me I do not see how any reasonable policy maker can understand that fact and yet think that the arts curriculums are sort of elective or non-essential.”

**Dale:** “Dr. Limb says ‘it’s important that schools, politicians and parents value the role music and the arts can play in helping us generate solutions to problems that lie ahead of us as a society.’”

**Dr. Limb:** “We need to identify solutions to problems that exist today that we don’t quite know. We do not know what the solutions are yet, we need to generate new ones and the only way we are going to do that is by using our creative capacities to come up with innovative ideas to problems. And that is something that the neuroscience of music and the neurobiology of what these studies suggest, is that very early on in childhood an engagement in these creative activities is important, certainly for the arts, but also well beyond the arts, in terms of developing our capacity to come up with something new.”

**Dale:** “For more information on music and the brain, log onto brainscienceinstitute.org. I’m Dale Connelly and from Johns Hopkins University… this is Brain Talk.”

Additional Information:

[Learn more about Dr. Limb](http://www.brainscienceinstitute.org)

[Listen to an interview with Dr. Nina Kraus](http://www.brainscienceinstitute.org) | The Science Network

Nina Kraus, of Northwestern University, discusses the long lasting effects that musical experience has on nervous system development which impact very basic communication skills.