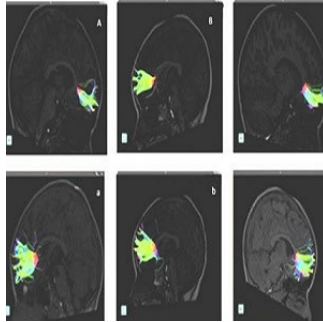

RSNA16: Musical Training Increases Brain Fibre Connections in Children



According to a study to be presented at the annual meeting of the Radiological Society of North America, music lessons can increase brain fibre connections in children and could be used to treat autism and Attention Deficit Hyperactivity Disorder (ADHD).

See Also: [DTI Reveals Brain Network Disruption in Children with PTSD](#)

Pillar Dies-Suarez MD, chief radiologist at the Hospital Infantil de México Federico Gómez in Mexico City says that it is already known that musical instruction benefits children with these disorders but findings from this study offer greater understanding as to how the brain changes and where new fibre connections occur with music training.

23 right-handed, healthy children between five and six years of age were included in the study. None of the study participants had any history of sensory, perception or neurological disorder and none of them had received any formal training in any artistic discipline.

All participants underwent pre- and post-musical training evaluation using diffusion tensor imaging (DTI) of the brain. DTI is an advanced MRI technique that produces fractional anisotropy (FA) of the movement of extracellular water molecules along axons. In normal circumstances, the FA values are fairly uniform. Any decrease in these values could suggest abnormalities. Studies conducted previously suggest a link between FA values, fibre connections and autism spectrum and ADHD.

Study participants were evaluated after nine months of musical training. DTI results showed an increase in FA and axon fibre length in different areas of the brain.

"When a child receives musical instruction, their brains are asked to complete certain tasks," Dr. Dies-Suarez said. "These tasks involve hearing, motor, cognition, emotion and social skills, which seem to activate these different brain areas. These results may have occurred because of the need to create more connections between the two hemispheres of the brain."

Musical training at an early age could thus help in brain development and could optimise neural networks and stimulate brain tracts. The researchers hope that these findings could help in creating targeted strategies for treating autism and ADHD.

Source: [RSNA](#)

Image Credit: RSNA

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