

# EDUCATIONAL ADVERTORIAL

## HOW MUSICAL INSTRUMENTS ENHANCE LIFE FUNCTIONS FOR ALL AGES BY PASSAIC MUSIC TEACHER, DAN BECKER

**T**his is the first article in a series that examines the significant benefits one derives from learning and playing a musical instrument. We will look at studies that demonstrate how music education increases academic achievement and how it may also ignite all areas of child development, including school readiness. Studies by neuroscientists suggest that areas of the brain responsible for processing sound, speech, language development and reading skills can be stimulated and improved through playing a musical instrument. Broadly speaking, all musical instrument practice and performance will have a beneficial impact on cognitive, socio-emotional, and brain development in children. However, instruments that employ



steel balls around the palm of the hand, which creates a wave of motion applied to all the fingers. It has been known since ancient times that this practice benefits brain cognition and helps stave off deterioration of brain function in old age.

In my experience of over 50 years of playing an instrument and studying music, I have noticed a marked increase in my own memory potential. **This sharpening of my ability to memorize has crossed over into many areas, such as language, mathematics, and science.** I have also experienced an ability to process new learning concepts, such as the ability to expand my teaching into other disciplines, such as mentioned above.

We can also explore the positive emotional or therapeutic benefits of playing an instrument. In today's world

**We will look at studies that demonstrate how music education increases academic achievement, including limudei kodesh, and how it may also ignite all areas of child development, including school readiness.**

all of the fingers to manipulate and articulate note selection, such as the Piano and family of woodwind instruments (e.g., Saxophone, Clarinet, and Flute), will have the greatest advantage because all fingers are utilized.

Additionally, playing a musical instrument and music education can influence individuals of all ages to develop in other areas. For example, one may increase memory potential, expand emotional expression, improve communication with family members and peers, enhance language acquisition, and improve reading readiness.

**In older adults, the application of playing a musical instrument can functionally delay early onset of cognitive decline such as dementia and Alzheimer's disease.** Playing an instrument stimulates areas of the brain that might otherwise systematically lose function due to the aging process. Over the millennia, China developed a practice of rotating two

of high stress and current realities, such as the health situation, children and adults can potentially eliminate some of their stress through the aesthetic, calming, and meditative aspects of playing an instrument. Through practice, the music student can also measure one's growth and achieve self-satisfaction with tangible results. For some, this can serve as a vehicle towards improved self-esteem, which can help an individual to better adjust in all areas of life.

In upcoming issues, we will look closely at research by neuroscientists and discover how their studies can actually pinpoint an increase in academic learning and potential. I welcome your questions or comments. Please see my contact information in my accompanying ad for Dan Becker Music Teacher.

*By Dan Becker, Music Teacher and Passaic Resident  
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**PASSAIC CANDLE LIGHTING (18 MINS) AND HAVDALAH TIMES**

Yisro: (Jan 21-22) 4:42pm Havdalah: 5:52pm (50mins) / 6:14pm (72 mins)  
Mishpatim: (Jan 28-29) 4:51pm Havdalah: 6:00pm (50mins) / 6:22pm (72 mins)  
Coming soon: Eve of Monday Jan 31: Begins 2 day Rosh Chodesh Adar 1

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# Jewish Local Pages

Relevant and Time Sensitive Information for the Local Jewish Community

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**Passaic / Clifton Edition**

## HOW MUSICAL TRAINING SHAPES THE BRAIN

INCREMENTS IN STRUCTURE AND FUNCTION  
MUSICIANS COMPARED TO NON-MUSICIANS

### FRONTAL LOBE

INCREASED GREY MATTER VOLUME  
superior, medial, inferior frontal gyrus  
- executive functions

INCREASED fMRI ACTIVATION  
primary & supplementary motor areas  
- motor preparation and execution  
Broca's area - speech production

### TEMPORAL LOBE

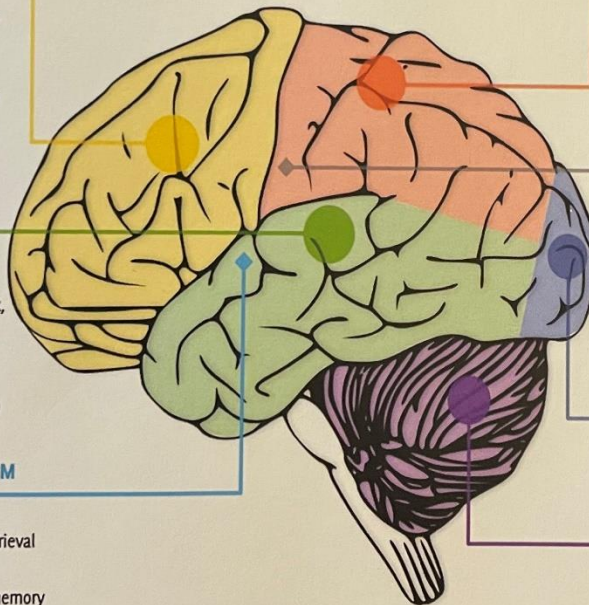
INCREASED GREY MATTER VOLUME &  
INCREASED fMRI ACTIVATION  
Heschl's gyrus - primary auditory cortex,  
pitch perception  
superior temporal gyrus - auditory  
processing

INCREASED MISMATCH NEGATIVITY (EEG)

### BASAL GANGLIA & LIMBIC SYSTEM

INCREASED GREY MATTER VOLUME  
hippocampus - memory formation & retrieval

INCREASED EEG RESPONSE  
temporal-limbic areas - emotions and memory



### PARIETAL LOBE

INCREASED GREY MATTER VOLUME  
primary somatosensory cortex - touch perception

INCREASED fMRI ACTIVATION  
supramarginal gyrus - syntax processing  
and attention

### WHITE MATTER TRACTS

INCREASED WHITE-MATTER INTEGRITY  
corpus callosum - connects brain hemispheres  
corticospinal tracts - connect motor areas with  
spinal cord  
short fibres - connect sensory and motor areas  
striatum - motor planning and reward perception

### OCCIPITAL LOBE

INCREASED GREY MATTER VOLUME  
lingual gyrus - score reading

### CEREBELLUM

INCREASED GREY & WHITE MATTER VOLUME  
movement coordination and motor learning

**EXCITING NEWS: CAMP NOFESH IS OPEN TO BOYS LEAVING GRADE 6 THIS SUMMER - SEE PAGE 19**

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