Piano practice can modify brain structure and treat cognitive diseases

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Background: Strong evidence suggests that piano practice can not only enrich life but also strengthen brain function and treat certain cognitive diseases such as dementia.

Methods: We searched PubMed using two key words, "piano" and "brain", to identify articles that provided experimental evidence of piano practice as a catalyst for cognitive changes.

Results: Extensive musical training enhances established neural links between auditory and motor areas of the brain. Long-term training develops, strengthens and enables flexibility in these connections allowing proficiency in performance. Piano training increases functional connectivity within the sensorimotor network and increases functional connectivity and structural connectivity of the auditory-motor network. Interestingly, it was further found that the changes in functional connectivity within the sensorimotor network and structural connectivity of the auditory-motor network were positively correlated with practice time. Furthermore, it was found that piano practice strongly induced oscillatory gamma band activity, reflecting higher perceptual learning. Another study showed that piano practice can induce brain activity in specific areas as determined by a ¬¬¬15O-water positron emission tomography. Overall, compared to controls with no long-term piano practice, people with long term piano practice demonstrated improvement in memory, planning, concentration, and strategy maintenance.

Conclusion: Piano practice is associated with changes in brain structure and electrophysiology that are correlated with improvement in numerous cognitive functions. Piano practice can also possibly delay or treat cognitive diseases such as dementia.