

Music Mends Minds Research Facts - Summary

Music Mends Minds is a 501(c)(3) non-profit that creates musical support group bands for patients with neurodegenerative diseases such as Alzheimer's, dementia, and Parkinson's as well as traumatic brain injury, stroke and PTSD.

- **5.7 million** people suffer from Alzheimer's (www.alz.org/facts) -

- **Every 3 seconds** someone in the world develops dementia (<https://www.alz.co.uk/research/statistics>) -

- Parkinson's disease afflicts 1 million Americans, costing **\$25 billion each year** (www.parkinson.org) -

The Interplay Between Music, Neuroplasticity, and Brain Development:

Neuroplasticity: The ability of the brain to change, repair, and reorganize itself

- **Musical education** has been associated with increased **neuroplastic response**, and leads to **healthier cognitive outcomes** later in life (Shaffer, 2016).
- When classically trained musicians are asked to **improvise**, several brain regions are activated simultaneously. Practicing improvisation allows us to **better integrate various brain functions** during other activities as well! (Loui, 2018).
- When **infants** as young as six-months old participate in **active musical experiences**, there is a large positive influence on **social and communicative development** (Gerry et al., 2012).
- While early musical training is associated with better long-term outcomes, **singing** in a choir **at older ages** has demonstrated **benefits** on the **aging of the brain**, as well (Cheever et al., 2018).
- Music is suggested to serve as a **protective role against cognitive aging**, and as a "complex learning challenge," musical training is a driving force for **neuroplasticity, rehabilitation, healthy cognitive aging**, and maintaining **cognitive reserve** (Herholz, 2014).
- Music training **primes musicians** for listening **challenges beyond music processing**, and its effect on neuroplasticity transfers to other domains such as **speech, language, auditory and verbal memory, attention, and vocal emotion** (Kraus et al., 2010).
- Patients with Alzheimer's Diseases may forget certain melodic content of songs, but their **ability to play their musical instrument** seems to be **unforgettable** (Baird et al., 2009).
- Through music rehabilitation, patients with dementia have been shown to demonstrate improvements in **attention, executive functioning, orientation**, and all forms of **memory**. They were also presented with **less anxiety, agitation, and depression**. For those with Parkinson's Disease, the interventions aided in overall **improvements in mobility, and quality of life percepts** (Sihvonen et al., 2017).

- Music therapy greatly improves **gait, rhythmic ability, and body awareness** in patients with Parkinson's Disease (Bukowska et al., 2016).
- **Musical feedback** and reinforcement during sonification therapy helps improve **motor functioning** (Scholz et al., 2015).
- **Mental interaction** and **creativity** aid in **maintaining a sense of personhood** in those with dementia. Engaging in music is a personal, social, and playful phenomenon that is reminiscent of one's past (Morrissey et al., 2015).
- Music has pronounced effects on the brain and cognitive abilities. Musicians have been shown to have **size differences in various brain regions** compared to non-musicians. Better **verbal and visual abilities** are also associated with musical training (Rodrigues et al., 2010).
- Unlike the general population of older adults, there seems to be a **decreased prevalence of dementia** in older, **former orchestral musicians** (Grant et al., 2013).
- With music therapy, those facing traumatic brain injury, cerebrovascular accidents, seizure disorders, and brain tumors showed reduced levels of depression, sensation seeking, and anxiety, along with **increased** ability in **emotional adjustment** (Thaut et al., 2009).
- Long-term effects of singing in patients with traumatic brain injury include **increased feelings of happiness and decreased feelings of sadness, fear, confusion, tension, and fatigue**. Immediate effects of song-singing are thought to intensify and provide **cathartic experiences** for people with TBI (Baker et al., 2004).

As we wait on cures for the many diseases that our targeted populations face, we are constantly updating our website and research documents with the latest research findings on how music benefits the mind and brain health.

The benefits of music on our patients are undeniable. In addition, we witness these effects on our caregivers, families, and audience members at every rehearsal.

Retired RAND Corporation Economist, Sue Hosek, and MMM have created a research survey that will provide data on the benefits of our music program and for quality assurance.

Dr. Mary Mittelman of NYU, together with MMM, have created a New York City Band to provide data for a rigorous evaluation of the effects of playing a musical instrument on the well-being of patients with Alzheimer's and/or dementia.

Sources for all of the above research facts can be found on our website at:
www.musicmendsminds.org/research