



# Neurologic Music Therapy Services of Arizona

## NMT and Parkinson's Disease

Parkinson's Disease (PD) is a degenerative disorder of the nervous system characterized by tremor, slowness of movement, and softening voice. PD is caused by altered levels of dopamine which decreases the amount of information sent to the motor areas of the brain, resulting in many of the difficulties seen in this disease.

Neurologic Music Therapy (NMT) is an evidence-based treatment model based on the neuroscience of music perception and performance. NMT treatment uses rhythm and music in order to drive changes in the structure and function of the brain and nervous system, thus optimizing how individuals are able to experience and interact with the world around them. In NMT treatment, music and rhythm access functional brain connections in order to bypass damaged areas and support strengthening new networks.

### Rhythmic Entrainment

Research in the area of music and motor rehabilitation supports the use of music, specifically rhythm, in the retraining of movement deficits. Rhythm effectively cues movement for individuals with PD by bypassing the damaged basal ganglia and utilizing a different route to the motor cortex, resulting in longer strides, more normalized arm swing, and increased ability to initiate movement from a frozen state. Additionally, musical patterns drive the shape, intensity, and direction of non-intrinsically rhythmic movements.



Musical patterns designed to fit the body mechanics of pre-gait exercises, increase quality of movement.



Performing a musical part within a more complex structure exercises selective attention.

### The Impact of Cognition

Though Parkinson's is primarily thought of as a movement disorder, increasing studies have identified challenges with attention, executive function, and dementia in Parkinson's, and have linked such cognitive deficits with higher occurrence of freezing of gait. With the loss of automatic movement, individuals with PD have to be increasingly conscious of all movements, even in the midst of distraction. Music exercises can train auditory attention through practicing responses to auditory cues and patterns. These exercises can then be integrated into movement experiences to replicate life scenarios.

### Singing Out Against PD

In PD, there is often significant deficit in speech fluency, articulation, intelligibility, volume, and rate. Because of the biological similarities between speaking and singing, the use of music for voice treatment is highly indicated. NMT treatment techniques include utilizing oral motor instruments to increase breath support and voice projection, rhythmic cueing to improve articulation and prosody, and vocal exercises to maintain or improve speech range and melody.

*For more information about services available at NMTSA, contact us at [info@nmtsa.org](mailto:info@nmtsa.org) or on the web at [www.nmtsa.org](http://www.nmtsa.org)*