Music Therapy and Stroke Rehabilitation

What We Know

› Stroke is the third leading cause of death and a leading cause of disability in the United States. Stroke survivors often experience significant physical, psychological, cognitive, and social challenges.

• Music therapy is one of several alternative therapies used in the treatment of clients following stroke. It is designed to complement an interdisciplinary approach to client care and to improve quality of life; it is not intended to replace traditional treatments or medications.

– Music therapy involves the use of music by a board-certified music therapist to evaluate and address the effects of disease.

– There is a reciprocal relationship between music and brain function wherein the brain that engages in music is changed.

- The act of listening to music involves brain processes that are perceptual, cognitive, emotional, and motor.

– Music and language may be processed by the same neurological systems in the brain.

– Research findings suggest that music therapy improves cognitive function, motor function, speech and language, and mood in persons with various stroke-related disorders.

› Research is conflicting regarding the therapeutic value of music therapy after stroke.

• Music therapy is more successful than no intervention in improving mood and social interaction.

– Group musical therapy treatments are more effective than individual treatments in improving social interaction.

– Researchers who conducted a study of the effect of participation in Ronnie Gardiner Rhythm and Music (RGRM) therapy (i.e., a music-based method that combines audio, visual, tactile and kinetic energy, with music to improve mobility, motor skills, balance, speech, reading, and memory) concluded that it helped participants come to terms with their poststroke bodies, and that meeting the demands of RGRM helped them find renewed meaning in their lives.

– Researchers who studied a therapy that combined music and movement concluded that participants who received the therapy had improved mood states when compared to the control group.

• Evidence favors

– gait training in conjunction with rhythmic musical feedback over conventional gait training to improve gait pattern and velocity.

– rhythmic auditory stimulation (RAS) to improve gait velocity, stride length, cadence, and standing balance.

– music therapy over language therapy or no therapy to improve verbal memory and focused attention.

– music therapy for cognitive rehabilitation through musical neglect training (MNT).
MNT has two specific techniques. The first is active performance exercises with instruments. The exercises, structured with tempo, time, and rhythm, are arranged to focus the client’s attention in the neglected visual field. The second is listening to music to stimulate arousal in the brain while engaging in exercises that are targeted toward inattention or visual neglect\(^{(15)}\):

- music therapy over no therapy for improved range of motion in shoulder, elbow, and/or hip joints on the affected side poststroke\(^{(6)}\)
- music therapy to help restore motor function in the upper limbs\(^{(2,15)}\)
- An intervention that utilized eight white keys on a piano and an electric drum set improved participants’ arm strength and quality of life. In playing the piano, the participants had to perform fine motor skill movements with the affected hand to make the piano give the correct tone\(^{(2)}\)
- Therapeutic instrument playing has clients practice motions in repetitive cycles to improve motor control and regain function\(^{(15)}\)

Music therapy improves speech, reduces pain levels during exercise, and increases range of motion, but the improvement is not statistically significant\(^{(7,10,11)}\)

No randomized controlled trials have investigated the effect of music therapy on sleep or memory in stroke survivors

Limitations of studies include confounding variables, small sample sizes, lack of randomization, and lack of controls

In a recent single-case study, researchers found that music therapy was associated with improved motor function; by using functional magnetic resonance imaging and transcranial magnetic stimulation, the researchers determined that clinical improvements following music therapy were accompanied by neural changes\(^{(12)}\).

### What We Can Do

- Learn about music therapy following stroke and the different areas of your clients’ lives that may be improved with music therapy
- Share your knowledge about music therapy with your colleagues
- Develop an awareness of your own cultural values, beliefs, and biases and develop knowledge about the histories, traditions, and values of your clients. Adopt treatment methodologies that reflect the cultural needs of the client\(^{(4,9,16)}\)
- As social workers, maintain a good working relationship with music therapists
- Request referral of stroke survivors to music therapy, especially for those survivors with affected mood and decreased social interaction poststroke

### Note

- Recent review of the literature has found no updated research evidence on this topic since previous publication on October 16, 2015
References


