

**Bradt J, Magee WL, et al. Music therapy for acquired brain injury. Cochrane Database of Systematic Reviews 2010, Issue 7, Art. # CD006787.**

Design: Meta-analysis of clinical trials

**PICOS:**

- **Patient population:** Patients older than 16 who had acquired brain damage of a non-degenerative nature from TBI, stroke, anoxia, infection, or mixed cause; any condition of a progressive nature was excluded
- **Interventions:** Music therapy which was delivered by a formally trained music therapist using one or more of several interventions:
  - o Clinical improvisation in which participants are involved in music making with the therapist
  - o Melodic intonation therapy or other voice and singing technique
  - o Rhythmic auditory stimulation (RAS) or auditory cueing
  - o Patients listening to music
  - o Song writing
- **Comparison interventions:** Standard care alone or standard care combined with other therapies or with placebo
- **Outcomes:** Improvement in gait (velocity, cadence, stride length, etc) or improvements in upper extremity function (grasp strength, arm control, hand function)
- **Study types:** Randomized or quasi-randomized (e.g., allocation of treatment by alternating patients) clinical trials

**Study Selection:**

- Electronic databases such as Cochrane Stroke Register, MEDLINE, EMBASE, CINAHL, and others through July 2009
- Hand searches of numerous music therapy journals and conference proceedings dating as far back as 1974
- Music therapy web sites such as the Music Therapy Neurology Network
- Two review authors independently assessed risk of bias (randomization, allocation concealment, blinding of assessment, dropouts)

**Pertinent results:**

- The authors included 7 studies with 184 participants which examined the effects of music on gait parameters, speech, hemiparetic arm movements, agitation/orientation, and pain during exercise
- Pooling of outcome data was only possible for two studies with 98 participants which compared rhythmic auditory stimulation (RAS) with standard neurodevelopmental therapy (NDT) within 4 weeks of a hemiparetic stroke
  - o RAS patients improved gait velocity an average of 14 meters/minute better than NDT
  - o RAS patients also increased stride length more than NDT patients by an average of 0.23 meters

- RAS patients had greater gait symmetry (having equal swing time of successive steps) than the NAD patients
- Results for upper extremity function, speech, behavioral outcomes, and pain were not pooled due to having too few studies to support conclusions
- One RCT reported benefits of melodic therapy voice training techniques on chronic aphasia
- Poor reporting compromises the quality of the included trials; however, it was possible to ascertain that the two trials of RAS had adequate control of bias

Authors' conclusions:

- RAS may be beneficial for improving gait parameters such as velocity, symmetry, cadence, and stride length in stroke patients
- However, given the limited number of patients and studies, more RCTs are needed to strengthen the evidence supporting RAS
- The evidence of trials on other forms of music therapy for other outcomes was sparse and of poor quality
- In the absence of sufficient evidence, recommendations for clinical practice cannot be made for aphasia, mood, activities of daily living, and social skills

Comments:

- The large number of databases and the large array of hand searches are not likely to have missed clinical trials of good quality and adequate size
- The main outcome in the included studies was gait velocity; it appears that 6 minute walking distance was not reported
  - Since 6 minute walking distance may be a better predictor of community walking function than gait velocity per se (Dean et al 2001), the results may apply only to one aspect of walking function

Assessment: High quality meta analysis supporting good evidence that music therapy may improve gait speed, but that effects on gait endurance are less clear; adequate for some evidence that music therapy may improve gait symmetry, cadence, and stride length

Reference:

Dean CM, Richards CL, Malhouin F. Walking speed over 10 metres overestimates locomotor capacity after stroke. *Clinical Rehabilitation* 2001;15:415-421.