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Active Music Interventions in Therapeutic Settings: Current and Future Applications

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Introduction

Active music therapy techniques have been utilised to treat a single ailment or reduce symptoms of numerous mental or neurological problems affecting cognitive, emotional, social and motor functions, either alone or as part of polytherapy. We describe active music therapy as a mix of music and treatment in which patients actively engage in generating music rather than being passively exposed to music. The effects of active music interventions have been investigated most thoroughly in the context of neuro-rehabilitation. Active music therapy can include a variety of musical activities, such as rhythmical training, musical instruments and singing. The following sections discuss several approaches to active music therapy [1].

Furthermore, we describe numerous components that allow for altering musical expressiveness and physical involvement during active musical interventions (based on theoretical considerations beyond the scope of this work). While we provide multiple research in various categories of one-time interventions and training, we underline that musical therapies, while frequently inspiring and interesting to participants, are not a magical cure.

Description

Neurologic music therapy (NMT) is a promising strategy for assisting neurorehabilitation and improving functional recovery. Thaut, et al., for example, found that a 30-minute musical intervention session employing a musical entrainment paradigm dramatically enhanced mental flexibility and self-efficacy in individuals with traumatic brain injury (TBI). Exercises in rhythmic synchronisation were a fundamental component of the paradigm. However, patients did not improve in terms of memory or attention in this trial. The impact size for this research was moderate, at 0.3. Rhythmic auditory stimulation is another sort of music therapy that employs rhythmic synchronisation (RAS). It necessitates matching actions (for example, footsteps) with a sound that can be "metronome-like" or complicated music. RAS has been found to improve motor function in a variety of disabilities. Following RAS, hemiparetic stroke patients demonstrated gains in gait and upper body rehabilitation. In summary, rhythmical training was demonstrated to increase motor performance in particular, albeit cognitive effects were infrequently recorded [2].

In a research employing common musical instruments, auditory input from playing a keyboard was found to improve leftward exploration in individuals with spatial neglect. Eleven individuals with leftward spatial neglect were taught to push all the white keys from the farthest right to the end of the keyboard. When the keys were combined with the normal right to left scale, patients displayed substantial leftward exploration when compared to quiet or random mismatched sound situations. Another research employed musical instruments in a 30 minute rehabilitation session four times per week with two chronic visual–spatial neglect patients. The two patients' spatial awareness improved after the intervention session and an improvement in tests evaluating neglect during a one-week follow-up suggested a longer-lasting benefit.

The music training groups were given two 30-minute sessions each week and were required to practise for at least 15 minutes per day. The California Verbal Learning Task revealed a considerable increase in learning techniques, memory and retrieval of knowledge in both music-training groups after eight weeks. Meanwhile, the healthy control training group improved significantly on the Stroop word/color test, while patients did not improve on this task (reading speed, attention). This study's effect size was 0.4. Another case in which instrument training has been demonstrated to improve motor skill recovery is in patients who have lost control of their hand and arm motions following a stroke [3].

In compared to a control group that received conventional therapy, patients who were taught to play an electronic drum set and piano had enhanced motor control following training, as evidenced by a substantial effect size. Beyond improving motor function, actively making music with voice or instruments has been shown to improve emotional functioning and perceived quality of life in Parkinson's disease patients with severe motor problems, such as bradykinesia, when compared to a similar patient group engaging only in physical activity. A meta-analysis of six RCTs found that music therapy emphasising active musical engagement (for activities that do not need a long transfer) might improve motor symptoms when walking in Parkinson's disease patients [4].

Melodic intonation treatment, in which patients are taught to sing basic melodic contours while tapping after a stroke, has been demonstrated to be useful in improving speech in non-fluent aphasics. Musical leisure activities, such as singing and listening to music, have been shown to improve mood, orientation, distant episodic memory, and, to a lesser extent, attention and executive function in patients with dementia. Singing also improved short-term and working memory, as well as caregiver well-being, while listening to music improved their quality of life. In conclusion, frequent musical leisure activities show various advantages in mild/moderate dementia and may be beneficial in dementia care and rehabilitation.

Additionally, singing while walking has been demonstrated to enhance the gait of Parkinson's disease patients. In a different study, researchers evaluated external vs internal cueing (singing) in persons with Parkinson's disease. Internal cueing enhanced gait velocity, cadence and stride length while walking backward and reduced variability in both backward and forward walking. External cueing, on the other hand, decreased gait stability while improving other gait metrics just little. However, other subsequent research on various situations had more moderate outcomes. Music therapy had an effect on music-specific abilities, such as music perception, in patients with recent cochlear implants, according to Peteresen and colleagues, although transfer skills in speech perception were also visible in the control group [5].

Conclusion

Finally, we analysed research that used active music therapy in patient populations in this study. Based on the foregoing and other facts, we concluded that music therapy is suggested as a non-medicated therapy. Music intervention, for example, is classified as "Class IIb, Level B" by the American

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Heart Association and the American Stroke Association, indicating that it is encouraged, however its efficacy has to be further proved, highlighting the fundamental concern in this sector. This refers to the absence of replicability in numerous components of music therapy, such as physical exertion, musical agency and systematic matching between control and patient groups.

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Conflict of Interest

No potential conflict of interest was reported by the authors.

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