

The role of music in physical rehabilitation



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Dissertation proposal

The Role of Music in Physical Rehabilitation

Philosopher Plato in the Greek Doctrine of Ethos states, ' Music is an art imbued with the power to penetrate and heal the very depths of the soul' (Harvey, 1980) . Since antiquity, music has served a therapeutic role in cultural tradition. Despite having long been recognised for its psychological and physiological effects, its use in modern treatment modalities has only become of interest to medical professionals in the last few decades. Music therapy (MT) was first established as an allied health profession post-Second World War, in response to the role played in rehabilitation programmes for war veterans (Chiang 2008: 30). It is, therefore, surprising that alongside clinical rehabilitative therapies; physiotherapy (PT), occupational therapy (OT) and speech and language therapy (SLT), MT is still perceived to be adjunctive in clinical practice.

Clinics provide rehabilitation therapies hoping to maximise independence of those with physical impairment (Weller and Baker, 2009). This paper therefore, aims to achieve a synthesis of interdisciplinary research sources questioning the role of music in physical rehabilitation. This research question will contribute a foundation for further research into how music can be utilised to maximise independence of patients suffering from physical impairment as a consequence of Traumatic Brain Injury (TBI). With regard to the dissertation I intend to answer several sub-questions including

- The current MT interventions in physical rehabilitation for TBI
- The role of the music therapist

- The function of harmony and rhythm in current rehabilitative therapies

I will collate my research through a systematic review of secondary research which I will then compare to interviews with physiotherapists, occupational therapists, music therapists and speech and language therapists. Following my preliminary research, I predict elements of music to be present in other clinical rehabilitative therapies. This is due to the recent academic interest into rhythm. I also foresee the music therapist not being essential in the implementation of music-based therapies due to other therapies' ability to implement music functions into their practice.

Literature review

In wanting to obtain an insightful understanding of the research area, I pursued online databases and libraries with the keywords ' music', ' physical recovery', ' rehabilitation', ' music therapy' and ' therapy'. After initial reading I noticed common themes surrounding rhythm, motivation, coordination and neuroplasticity so added these words to my preliminary database search. Being an inherently interdisciplinary topic, I was able to obtain a rich range of academic perspectives, the most relevant being from neuroscientists, psychologists, music therapists and musicologists. Source types include books, handbooks, systematic literature reviews and articles.

Physical impairment can be subject to a multitude of causes. However, neuroscientists Alexa Riehle and Eilon Vaadia in their book '*Motor Cortex in Voluntary Movements: A Distributed System for Distributed Functions*' argue that the recovery of motor function is mediated by the brain's ability to compensate for injury and disease. This ability, known as neuroplasticity,

allows neurons to compensate for damaged areas in the brain, by adjusting activity to form new neural circuitries in replacement of damaged ones (Riehle, Vaadia, 2003). Fundamentally the authors are proposing that regardless of what causes physical impairment, the brain's ability to compensate enables rehabilitation. This suggests therapies that aim to rehabilitate should focus on stimulation of neuroplasticity. Furthermore, the book examines 'anatomical and physiological evidence that demonstrates how the motor cortices directly access spinal cord mechanisms involved in the generation of movement' (Riehle, Vaadia, 2003). This would suggest that in physical impairment the damaged area of the brain would be the motor cortices, being responsible for movement. In accordance with this literature, for music therapy to play a respected role in physical rehabilitation it must be able to fulfil the purpose of other therapies. Therefore, music would need to stimulate neuroplasticity in motor regions of the brain.

In the ' *Oxford Handbook Of Music Psychology*' psychologist Simone Dalla Belle takes a biomedical approach to music intervention, exploring how the medium engages perceptual, cognitive, motor, sensorimotor processes and associated neuronal circuitries (Belle, 2016). Belle continues, suggesting that musical training and early exposure can also encourage neuroplasticity in these areas. In context with Riehle and Vaadia, this suggests music has the potential to assist neuroplasticity acting as stimuli. In conjunction, both sources suggest music can mediate movement regions in the brain through directed stimulation.

Alternatively, Straum (2000) in her systematic literature review on ' *Music Based Rehabilitation*' , found the most commonly cited role of music in <https://assignbuster.com/the-role-of-music-in-physical-rehabilitation/>

physical rehabilitation was to facilitate physical coordination. Rhythm and melodic continuity were said to aid the coordinator on movement patterns (Straum, 2000). Ultimately, Straum asserts the most effective role of music being for motivation in repeated movements. In spite of this, one might argue against the validity of the study due to only 48% of experimental design studies having significance and chosen sources dating from the mid to late 1900s. With frequent scientific developments in research, this review may not act as a reference to the current paradigm. However, the review does mention physical coordination to be the most commonly cited role of music in physical rehabilitation. This proves interesting, as it suggests interest and reasoning in other fields to believe there is a significance worth researching. Furthermore, physical coordination is mentioned significantly in later research, demonstrating music's capacity to help facilitate coordination.

Neurological music therapist Dr Michael H. Thaut, however, has dedicated his research to rhythmic applications to neurologic rehabilitation of motor function. In his most recent book '*Rhythm, Music, And The Brain: Scientific Foundations And Clinical Applications*' Thaut proclaims rhythmic stimulation to have significant effects as coordinative sensory input, to entrain timing functions (Thaut, 2013). He explores how anticipation can act as a continuous time reference onto which movement can map a stable temporal template (Thaut, 2013). This function of music and movement mapping is similar to Straum's view of music as a coordinator, validating his view and providing a reason for further research into this area. Unlike Straum however, Thaut explores how this idea can be implemented in therapeutic

practice through 'rhythmic auditory stimulation' (RAS). RAS uses the same principles employing music and rhythm to provide anticipation, time reference, long term memory stimulation which, consequently, increases coordination (Thaut, 2013). These functions primarily represent those of a cognitive nature, suggesting that cognitive organization is the core role of music based rhythmic interventions.

Alternatively, Musicologists Claire M. Weller and Felicity A. Baker in their literature review 'The role of music therapy in physical rehabilitation' argue physical rehabilitation requires intensive emotional, physical and cognitive exertion. Furthermore, a lack of motivation and emotional stability can impede rehabilitative potential. The paper suggests that if a patient does not have the emotional strength to carry out physical exercises they will not do them and therefore limit their rehabilitative potential (Weller and Baker, 2009). The prevalence being that when delivering therapy all of these variable components need to be considered to facilitate the best potential for the patient. Weller and Baker suggest Music Therapy provides this holistic care approach in providing the physical, emotional and social needs of the patient (Weller and Baker, 2009). This indicates that the role of music in physical rehabilitation is unique and has the capability to be more effective if procedures were standardized.

To conclude, it is clear that there is a growing body of interdisciplinary research from respected academics questioning the role of music in physical rehabilitation. With regard to my research question, the literature I have reviewed suggests that music plays a 'role' in neuroplasticity, motor coordination, cognitive organization and emotional support. The current <https://assignbuster.com/the-role-of-music-in-physical-rehabilitation/>

state of literature provides an optimistic opinion on the role of music in physical rehabilitation. However, despite the growing body of literature there is still a need for that research to be implemented and standard practice to be consolidated to maximise the potential of patient independence. I hope in my dissertation to explore opinion on using music in physical rehabilitation as both therapy and a tool in alternate clinical therapies.

In consideration of ethical guidelines, I am unable to undertake any primary research involving victims of motor impairment. Consequently, I will conduct a series of interviews with rehabilitation therapists. Each interview will be recorded (audio only), transcribed and coded to extrapolate the necessary qualitative data useful to the study. Their responses will remain anonymous to ensure reliable data is collected, recordings will be used solely for my studies and destroyed after and all participants will be given the right to withdraw from the interviews at any given point. In ensuring control measures are in place I will ensure to interview a control group of therapists from different rehabilitation clinics. Despite not being able to involve the victims in my primary research I have managed to obtain contemporary secondary research involving patients and their care givers which I will systematically review.

I have composed below a simple research timetable to assist in time management of this project.

Week

Commencin Actions to be taken

Time allowed

Resources
needed

Other
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(12/11/18)	Refine sub questions	6 hours	Working hours	
(19/11/18)	Begin secondary research Gathering evidence portfolio	4 weeks	Access to library	
(26/11/18)	Organise primary research interviews with SLT, OT, MT and Physio – Construct emails and arrange timetables	3+ hours (dependant on response from participants)	Email access	Writing
(03/12/18)	Construct interview questions	8 hours	Access to library	
(10/12/18)	Begin intensive Reading week to ensure the completion of evidence portfolio	15 hours	Access to library	
(17/12/18)	Format bibliography	4 hours	Access to library	
(24/12/18)	Christmas			Recording writing
(31/12/18)	New Year			Recording writing
(07/01/19)	Analyse and summarise	1 week	Access to	

	sources		library	
			Room space	
(14/01/19)	Conduct interviews	1 day	and recording equipment	
(21/01/19)	Begin formulating notes into sections	1 week	Access to library	
(28/01/19)	Refine content in each sub question	4 hours	Working hours	
(04/02/19)	Draft sections and the prepare table of contents	2 weeks	Working hours	
(11/02/19)	Transcribe interviews	1 week	Working hours	
(18/02/19)	Analyse interview results	1 week	Working hours	Business deadlin
(25/02/19)	Finish summary and conclusion	4 hours	Working hours	
(04/03/19)	Draft submitted		Working hours	
(11/03/19)	Adjust dissertation in accordance with feedback	1 week	Working	

	notes		hours
(18/03/19)	Proof reading and layout	1 week	Working hours
(25/03/19)	Dissertation deadline		Working hours

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