Music Therapy and Parkinson’s Disease

By Sergio Hazard

Abstract

This paper presents the results of music therapy interventions with Parkinson’s patients at the Physical Medicine and Rehabilitation Service of the National Institute of Geriatrics in Santiago of Chile.

Introduction

In my paper, I offer the results of a music therapy intervention conducted between September and December 2006 at the Physical Medicine and Rehabilitation Service of the National Institute of Geriatrics President "Eduardo Frei Montalva" in Santiago, Chile. The intervention was conducted during clinical neurological rehabilitation of idiopathic Parkinson’s disease in this treatment center.

Our goal for the intervention was to contribute to the rehabilitation of the patients' health in the areas of functionality, emotionality and sociability.

We applied a music therapy methodology called the Rhythmic Auditory Stimulation and receptive and active methods.

Some results noted by the intervention team report improvement on gait functionality and a decrease in the risk of falling, improvement of the mood
disorders of patients (depression); and an increase in the motivation and willingness to face new tasks.

This paper represents a contribution to the general knowledge of music therapy in the field of Public Health in our country, making it possible to incorporate our discipline in the process of rehabilitation of geriatric patients with neurodegenerative disorders, such as Parkinson's disease.

**General Background**

Parkinson's disease (PD) is a neurodegenerative disorder of the central nervous system, affecting the automatic component of movement (extrapyramidal syndrome). Its four cardinal symptoms are: gait and posture disorders, rigidity, bradykinesia (slowness of voluntary movements) and resting tremor (Burch and Sheerin 2005).

In Chile, there are approximately 23,000 people with PD (Chiófalo et al. 1992, Chaná and Galdames 1998) and there are very few institutions specializing in the treatment and rehabilitation of disease. Among them are:

- Agrupación de Amigos de Parkinson (Friends Association of Parkinson) (2003).
- Liga Chilena Contra el Mal de Parkinson (Chilean League Against Parkinson’s disease) (1987).

All of them strive to create integration networks, medical support, psychological, as well as social and economic support to patients and their immediate families. They also attempt educate the general public regarding the disease.

There is also the Physical Medicine and Rehabilitation Service and Day Hospital of the National Institute of Geriatrics President "Eduardo Frei
Montalva" (1968).

**Theoretical Framework Reference**

My theoretical guidelines are based on three thematic areas of action: music therapy in the field of geriatrics, neurologic rehabilitation, and the sciences of sound.

1. **Music therapy in geriatric treatment**

   In this field, the main source of research has been the work and impetus of the Australian music therapist Ruth Bright, who with more than 40 years of clinical experience, is considered a pioneer and authority in the field of music therapy in geriatrics and neurological disorders.

2. **Music therapy in neurological rehabilitation**

   This area highlights the work of the Center for Biomedical Research in Music (CBRM) at Colorado State University in the United States, where initiatives have been guided by its directors Michael H. Thaut, PhD, Gerald C. McIntosh, MD, and others.

   The Center consists of three areas: The Academy of Neurologic Music Therapy Training, Neuroscience Research Laboratories, and Neurologic Music Therapy Clinics, which consist of groups of physical therapists and neurologic music therapists focused on services for members of the local community with mobility/motor deficits, resulting from stroke or other neurologic diseases such as Parkinson's.

3. **Vibroacoustic Therapy**

   This theoretical influence highlights the important work of Norwegian teacher, music therapist, and researcher, Olav Skille, who designed the process and technical equipment used in what he called Vibroacoustic...
Therapy (VAT). His work began in the 1980s.

In general terms, VAT is the use of sinusoidal, low frequency (30 - 120 Hz), sound pressure waves, blended with music, for therapeutic use. This intervention offers a way of using the physical properties of music and sound waves in order to improve the quality of life of persons who are suffering from different ailments.

**Context**

The music therapy interventions took place at the Physical Medicine and Rehabilitation Service of the National Institute of Geriatrics President "Eduardo Frei Montalva" of the East Metropolitan Health Service, Santiago, Chile.

The National Institute of Geriatrics (NIG) is a unique center in both specialty and national coverage. NIG takes a multidisciplinary approach. This is interesting because there is a rich mix of processes, people, actions, and structures that contribute to the learning experience. Attention is directed to the age group older than 60 years with geriatric syndromes (gait and balance disorders; swallowing problems; mood and memory disorders; problems with sleep; frequent falls; immobility issues; sensory disorders, and other disorders.). The Institute operates in two modalities:

1. **Inpatients** for diagnosis, treatment and rehabilitation, corresponding to 32 residents (women’s room, 18 beds and men’s room, 14 beds) whose average stay is 24 days (middle-term stay modality).

0. **Outpatients** who come to the Attached Center of Specialities for medical consultations in geriatrics, physical medicine and rehabilitation, geriatric psychiatry, among other things. Outpatients can also be served in the Day Hospital, initiated by a physician of the Institute, for functional rehabilitation, managing the risk of complications from
NIG’s principal strategic goal is to improve the quality of service by creating a model of comprehensive care specialty for the Elderly.

Health care is delivered by a multi-professional and interdisciplinary team consisting of geriatrician, physician specializing in physical medicine and rehabilitation physiatrist (a physician who specializes in physical medicine and rehabilitation), neurologist, traumatologist; kinesiologist (an individual skilled in or applying kinesiology), occupational therapist, phonoaudiologist, psychogeriatric specialis, nurse, nutritionist and social worker. This comprehensive team conducts geriatric assessments and designate a clinical diagnosis of functional capacity as well as physical, mental, and social capacities of the patient, and indicate a treatment regime, assistance, and rehabilitation of a preventive nature, progressive, continuous and integral.

**Intervention Goals**

**General Goal**

To contribute to the rehabilitation of the patients' health with idiopathic Parkinson's disease in the areas of functionality, emotionality and sociability.

**Specifics Goals**

0. Functionality-related specific goal:
0. To improve gait and balance disorders.
0. Emotionality-related specific goal:
0. To motivate and improve mood disorders such as depression.
0. Sociability-related specifics goals:
To improve and enhance the patient-caregiver relationship.

To facilitate intra-and interpersonal relationships.

**Methodology**

The medical model guided our interventions, to a degree. So we can call our work clinical or medical music therapy. However, in relation to the goals raised there was a mixture, to some degree, with the orientations of existential humanism and learning theories.

The methods that formed the underpinnings of our interventions at different stages of the work were:

0. **Rhythmic Auditory Stimulation (RAS)**, which uses the rhythmic quality of music and the physiological mechanisms inherent in rhythm perception and production, and rhythmic synchronization. RAS has been shown to have beneficial effects on gait spatiotemporal parameters (speed, cadence, stride length and breadth of gait).

0. **Receptive methods** where the basis is listening to music, which can be presented in different modalities, as a stimulus to creativity and a tool of diagnosis, and also as a stimulus to imaging the process and outcomes of treatment, as well as a modulator of moods.

0. **Active methods** deal with a basic activity where the focus is musical improvisation, consisting of facilitating spontaneous expression, a form of free and creative expressions for the patient.

The interventions were based on the work of a music therapeutic team formed by a supervisor, a co-therapist and myself, in the role of music therapist in charge.

The sessions were performed in the wards of the Physical Medicine and Rehabilitation Service, specifically, the gym of kinesiology and a clinical ward where men were inpatients.
The interventions progressed in 3 to 16 sessions lasting 30 minutes each, twice weekly.

The numbers of patients during the interventions were 4 (2 inpatients and 2 outpatients): Patient 1 (67-years-old), 5 sessions; patient 2 (92-years-old), 3 sessions; patient 3 (72-years-old), 11 sessions in NIG and 1 session at home; patient 4 (73-years-old), 15 sessions in NIG and 1 session at home.

The music therapeutic setting included wind instruments, percussion instruments, electronic instrument (keyboard), digital devices (chronometer, metronome), radio, videocamera, photo camera, audio recorder, a musical library based in the personal cultural background of patients, songbooks, design of special musical material, parallel bars, walker and a notebook.

**Music Therapeutic Process**

The treatment was oriented as a whole considering the clinical data of the patients and their diagnosis. The goals of intervention were constantly modulated by the main goal in geriatric rehabilitation that is "to maintain and/or improve functionality" of patients.

Thus, the intervention was organized considering a system formed by three integrated and related units of action. These units were present within all of the therapeutic processes giving a holistic view of patients, as well as the concept that there always is a place for rehabilitation. Hence, the specifics goals in terms of improving gait and balance disorders; motivating and improving mood disorders; improving and enhancing the patient-caregiver relationship, and facilitating the intra-and interpersonal relationships, were all regulated by these units. Units were designated as corporality and movement; emotionality; music, sound and vibration.
1. Corporality and Movement

The work unit of functional integration related to re-educate the gait and balance progressive in parallel bars and transferring from one point to another in training. It was worked using RAS, based on the use of clicking of the metronome, with or without background music, with or without support from rhythmic cues by the percussion instruments played by the music therapist in unison with the click of the metronome or the rhythmic pulse of meaningful music to the patient. In addition, it utilized the re-education of body schema based on passive mobilization exercises segmentally (head, neck and scapular waist) and Eutony [3] (cognitive sensoperception).

2. Emotionality

The work unit of psychosocial integration related to management mood disorders (depression), cognitive impairment, sleep disorders, anxiety, post-fall stress and cognitive-behavioral management. All of these activities were based on the ISO principle (related to the patient's sound identity) (Benenzon 1998), elaboration and integration of life history (free and guided imagery), guided listening (passive and active), phonation exercises and vocal output, musical improvisations referential and non-referential, and integrating patient-caregiver.

3. Music, Sound and Vibration

The work unit of integrating sound technology related to the use of music, sound and vibration in therapy. It had a transversal development in the therapeutic process and it was the linkage between functional and psychosocial work. All activities were focused to get physical and organic
relaxation and a good sensorimotor integration of patients and they were base on the principle of vibroacoustic (use of pure and complex tones, sound bath) (Skille 1991).

The unit was made by a library according to the sound-musical history of patients (ISO) and by the design and production of specific musical product through an audio-professional editing software (CD Work).

**Concluding Remarks**

At the end of the music therapy interventions, we observed the following results related to goals raised:

1. **Functionality-related Goal (assessed on patients 3 and 4 by 12 and 16 sessions, respectively)**

Observers noted improvements on gait functionality, specifically in terms of speed, cadence, stride length and breadth of, turns, changes of direction and transferences from one point to another.

Moreover, an improvement in the balance and decrease the risk of falling was noted. Before the therapy, patients were falling 2 to 3 times per week. During the therapy, patients did not fall. Patient reports were indicated by the caregivers (patients' wives).

Results were assessed by the use of the gait and balance valuation scale, Tinetti. Reaching scores within normal range:

<table>
<thead>
<tr>
<th>Tinetti Patient</th>
<th>Sessions</th>
<th>Admission score</th>
<th>Discharge score</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>12</td>
<td>13/28</td>
<td>24/28</td>
</tr>
<tr>
<td>4</td>
<td>16</td>
<td>15/28</td>
<td>26/28</td>
</tr>
</tbody>
</table>

Note: Cutoff point ≤ 20 suggests risk of falling
This is relevant because, as previously noted, the main goal in geriatric rehabilitation is to maintain and/or improve the functionality in the patient. In addition, the gait preservation is a very important prerequisite for preserving the quality of life of Elderly.

2. Emotionality-related Goal

Observers indicated a slight improvement in the mood disorders of patients (depression) and strengthening their self-esteem.

Results were assessed by use of the geriatric depression scale, Yesavage (15-GDS):

<table>
<thead>
<tr>
<th>Yesavage</th>
<th>Sessions</th>
<th>Admission score</th>
<th>Discharge score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient 3</td>
<td>12</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Patient 4</td>
<td>16</td>
<td>5</td>
<td>4</td>
</tr>
</tbody>
</table>

Note: Cutoff point ≥ 5 suggests depression

3.- Sociability-related Goal

The therapeutic process allowed to patients to satisfy the need to feel integrated into the world, to keep their individuality, and to build a bridge of communication between selves and surroundings, shifting the barriers imposed by the chronic and progressive nature of the disease. Moreover, staff reported an increase in the motivation and willingness to face new tasks and proposed learning. An important achievement was strengthening of the patient-caregiver relationship. This was assessed by a phonoaudiologist and an occupational therapist from the local Service.

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References


