

## Effect of physical therapy and musical therapy in the rehabilitation of patients with Parkinson's disease

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**Objective:** To determine the role of Passive Musical Therapy (MT) and Physical Therapy (PT) in the rehabilitation of patients with Parkinson's disease.

**Methodology:** This study was conducted at Ganj Baksh Spinal Research and Rehabilitation Hospital-Trust and Jinnah Hospital, Pakistan Lahore and included 15 patients with 3 and 4 Hoen and Yahr Classification of disability of Parkinson Disease. They were divided into three groups; Musical Therapy, Physical Therapy and Musical Therapy & Physical Therapy. Patients were assessed by Unified Parkinson's Disease Rating Scale (UPDRS) questionnaire at the end of

seven week therapy.

**Results:** Combined effect of MT and PT had more effect on depression, arising from chair, motivation, bradykinesia, rigidity, leg agility, posture, gait, postural stability and supine lying to sitting activity (P=0.000).

**Conclusion:** We recommended more work should be conducted for more reliable and sufficient information regarding the significance of PT and MT to manage Parkinson's disease. (Rawal Med J 201;42:121-123)

**Keywords:** Physical therapy; Parkinson's disease, musical therapy.

### INTRODUCTION

Parkinson's disease (PD) is the disease of basal ganglia, which produces characteristic types of motor dysfunction: tremors, slowness of movement without paralysis; and changes in muscle tone and posture.<sup>1</sup> Music Therapy (MT) is of two forms; one is passive form which gives importance to listening; the other one is active mode of music therapy, which enhances participation.<sup>2</sup> Passive form of MT may be helpful in enhancing concentration and memory, reducing stress and strain, coping to series of heart problems such as hypertension, and normalizing the patients.<sup>3</sup> Passive MT (PMT) was selected for this study, as there is not enough data available to support the effectiveness of PMT for the improvement of motor function i.e. Bradykinesia.<sup>4</sup> Classical music (Qawwali) is a direct experience which acts as vibration and affects the patients.<sup>5</sup> Passive MT would seem to be suitable in PD, even though there are, so far, no objective reports on the efficacy of this kind of therapy in PD. The aim of this study was to assess the efficacy of MT on motor involvement in patients with PD.

### METHODOLOGY

This pilot study was conducted at the Ganj Baksh Spinal Research and Rehabilitation Hospital-Trust and Jinnah Hospital, Lahore, Pakistan over five months and included 15 patients of PD. They were divided into 3 groups; Group A (MT), Group B (PT) and Group C (PT & MT) using Non probability convenient sampling technique. Patients with age 40 to 80 years, Stage 3 and 4 (Hoen and Yahr Classification of disability) and who could understand Urdu or Punjabi language were included in the study. Stage 5 patients and who could speak or understand Urdu or Punjabi language were excluded. Patients underwent intensive physiotherapy and final assessment was made at the end of 7<sup>th</sup> week by using UPDRS. Gender, age, depression, motivation/initiative, bradykinesia and supine lying to sitting activity were noted. SPSS was used for data analysis. Chi-square test/ Fisher's Exact test for qualitative attributes were used to see the significance of treatment on patients recovery. Friedman test was used to analyze the study hypothesis. P<0.05 was taken as significant.

## RESULTS

Nine out of fifteen patients are male among which each three receive

MT, PT and MT & PT. Six out of fifteen patients are female among which each two receive MT, PT and MT & PT.

**Table 1. Depression profile at different weeks in different study groups.**

Study Groups		MT	PT	MT+PT	P
Mean values	Baseline	3.00	3.00	2.00	0.000(sig nificant)
	2 <sup>nd</sup> week	3.00	3.00	2.00	
	4 <sup>th</sup> week	2.00	3.00	1.00	
	7 <sup>th</sup> week	1.00	3.00	1.00	

Total score for Depression is 4

**Table 2. Bradykinesia profile at different weeks in different study groups.**

Study Groups		MT	PT	MT+PT	P
Mean values	Baseline	2.80	2.00	3.60	0.000 (significant)
	2 <sup>nd</sup> week	2.80	2.00	3.60	
	4 <sup>th</sup> week	1.80	2.00	2.60	
	7 <sup>th</sup> week	1.00	2.00	1.60	

Total score for Bradykinesia is 4

Combined effect of MT and PT had significant effect on depression (Table 1), motivation, bradykinesia (Table 2) and supine lying to sitting activity (P=0.000).

## DISCUSSION

Participants from all three Groups showed large improvements in rehabilitation of Parkinson's patients by UPDRS scores. Our results showed improvements in motor abilities including changes in supine lying to sitting and emotional status related to passive MT. The MT-related motor response seemed to decline after each session, but an overall improvement was observed. Emotional functions were found to improve after each MT, but the values returned to baseline levels after 2 months of completion of MT.

MT has valuable effect on emotional variables and personal dealings due to its high level of sensory stimulation. Our study suggests a connection between emotions and the facilitation of movement promoting socialization, involvement with the

environment, expression of feelings, awareness, and responsiveness. MT-induced improvement in Bradykinesia could be due to the stabilization of external and internal rhythmic cues, which, acts as a timekeeper in patients with PD.<sup>6</sup> Indeed, researcher demonstrated that the initiation and execution times in sequential button-pressing tasks are positively influenced by acoustic cues.<sup>7</sup> The rhythmic and arousal effect of music influences both motivational and emotional processing.<sup>8</sup>

It has been hypothesized that the activation of emotional neural-based network is helpful in improvement of bradykinesia and this circuit is assumed to regulate motivational-incentive reinforcements of general behavior.<sup>9</sup> According to this hypothesis, the manual therapy techniques temporary activate the cortical-basal ganglia motor loop, which is mainly effected in Parkinson's patient.<sup>5</sup>

Some studies have shown that the patients with "anhedonia," which is the specific state of mind in which patient lost his interest to participate in activities of daily life and lost motivation, in these patient manual therapy techniques enhance the motivation and help the patients to come out of this state.<sup>10</sup>

## CONCLUSION

Combined effect of MT and PT had effect on depression, arising from chair, motivation, bradykinesia, rigidity, leg agility, posture, gait, postural stability and supine lying to sitting activity of PD patients. Effect of Verses of Holy Quran on PD should be assessed with appropriate sample size

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