

Dance/Movement Therapy with Groups of Outpatients with Parkinson's Disease

**Beth Kaplan Westbrook
Helen McKibben**

The treatment of medical and neurological illness is complicated by emotional factors. Dance/movement therapy is of potential benefit in such circumstances. The specific hypothesis was that dance/movement therapy would be more effective than exercise in the outpatient treatment of patients with Parkinson's disease. In a group setting, the effects of six weekly dance/movement therapy sessions on the neurological and emotional status of Parkinsonian patients were examined. A six week period of an ongoing exercise group was used in a crossover design as a control. Improvements in movement initiation were seen during the one-hour dance/movement therapy sessions, but not during the exercise groups. Although subjective improvements in mood were also apparent in the dance/movement therapy group, no statistically significant improvement in mild depressive symptoms could be documented. These results suggest that dance/movement therapy is useful as an additional approach in the treatment of Parkinson's disease patients.

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Introduction

The earliest use of dance/movement therapy, as pioneered by Marian Chace, was as an alternative to verbal therapies with severely disturbed patients (Chaiklin, 1975). Dance/movement therapy has since become an accepted form of treatment for psychiatric patients and is now being used in conjunction with other therapies in all categories of psychiatric illness. In addition, as the emotional issues of patients with medical illness have been acknowledged, dance/movement therapists have broadened their expertise to include neurologic populations. Dance/movement therapy has been successfully used as a component of rehabilitation in a variety of neurological disorders, including traumatic brain injury, spinal cord injury, stroke, multiple sclerosis, autism and sensory loss (Adler 1974, Kalish 1974, Wise 1981, Berrol & Katz 1985). This is not surprising since the dance/movement therapist is in a unique position to recognize the physical manifestations of emotional stress and to assist the patient in coping with the problems created by physical disability. Benefits of dance/movement therapy in neurological patients may include the following: increased body and emotional awareness, improved body image, and a renewed sense of physical and emotional well being.

Parkinson's disease (PD) is a chronic progressive neurologic disease which primarily affects patients after age fifty. Although the cause of most cases is unknown (i.e. "idiopathic"), damage to the basal ganglia region of the brain (e.g. carbon monoxide intoxication) can also result in a Parkinsonian syndrome. PD is first and foremost a movement disorder characterized by three classic symptoms: tremor, bradykinesia and rigidity. A number of other physical manifestations have also been described as outlined below (Adams & Victor, 1985, p. 37):

Early Symptoms

- poverty and slowness of movements
- impaired handwriting (micrographia)
- increased muscle tone and rigidity
- disorders of locomotion

Later Symptoms

- shuffling (festinating) gait
- postural abnormalities
- "freezing" episodes during postural changes

Signs

- tremor (resting tremor, pill-rolling movements)
- rigidity
- bradykinesia
- mask-like facial appearance and staring
- speech problems (low amplitude, monotone, poor articulation)
- drooling

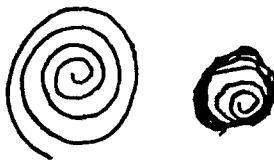
postural unsteadiness (loss of righting reflexes)
movements become simplified and lack connection

Tremor is the most obvious sign; this varies between patients and can also be influenced by other factors such as medication and anxiety. The tremor is usually most apparent in the upper extremities at rest and is noticeable in handwriting or drawing (Figure 1), but characteristically may actually decrease during movement of the limb. Thus the tremor is often not a severe functional movement problem for the patient. The accompanying rigidity is most apparent as an increase in muscle tone during passive movement of the upper extremities.

Bradykinesia, the difficulty in initiating movement, is the most debilitating symptom. Thus even minor improvements can greatly enhance the functional capacity of the patient. Patients who struggle with "getting started" may respond to movement strategies which tap alternative movement potentials. Paradoxically, when objects are tossed toward a patient (e.g. a set of keys), they can often catch them easily; yet, they may not be able to begin walking from a stationary position. Self-initiated movements are particularly difficult. Family members in this study often utilized alternative approaches to help the patient initiate movement.

Figure 1

Greater Washington Parkinsonian Society



Examples of handwriting and Archimedes spiral used in the study as part of the neurological assessment. The handwriting sample illustrates the tremor of a man with mild Parkinsonism. The spiral of the examiner (left) was copied by a woman with more severe impairment (right) demonstrating micrographia, the characteristic small script and drawings of these patients.

For example, one spouse regularly placed her foot just in front of her husband's foot. This promoted movement initiation vertically rather than sagittally, thus he could step up and begin walking more rapidly. It is common for Parkinsonian patients to hesitate or completely stop when trying to negotiate a narrow space such as a doorway. By walking backwards they may be able to negotiate space.

Parkinsonian patients may also show changes in mental status including significant depression (Mayeux, Stern, Rosen, & Leventhal, 1981; Fierger, 1984; Todes, 1984; Folstein, 1985; Taylor, 1986). Whether this represents an organic manifestation of Parkinsonism, or is a reaction to disability has been debated. Regardless of cause, emotional factors such as anxiety, stress and mood can directly effect the ability of patients to initiate voluntary movements. The somatic manifestations of depression include decreased movement initiative, lack of eye contact and limited use of space (Davis, 1978; Freedman, Kaplan & Sadock, 1976).

Impaired movement, with or without depression, is a reality for Parkinsonian patients. Since dance/movement therapists are trained to pinpoint and treat emotional problems on a body level, this modality seems appropriate to assist patients where their movement potential was impeded by depression.

Many communities have well-established support groups for patients with Parkinson's disease. Often part of this support includes small exercise groups led by one of the group or a family member. This study was designed to compare the benefits of a dance/movement therapy group with an exercise group. The hypothesis is that dance/movement therapy would have a greater impact on mood and movement initiation than exercise.

Method

Subjects

Parkinsonian patients were contacted through the offices of The Greater Washington Parkinsonian Society (Wash. D. C.). Two ongoing outpatient groups were available for the study; all group members agreed to participate and were included. Forty-two patients were initially seen in two groups (CC group and K group). Five patients did not participate regularly and were excluded from analysis. The patients ranged in age from 57 to 81 years old. The groups were similar in age (mean age CC = 72.6 yrs. vs. K = 69.9 yrs.). Eighty-six percent of the CC group were men whereas 40% of the K group were men. The patients were all ambulatory. The study was conducted in their usual meeting place: the recreation

areas of two suburban churches. All patients signed consent forms and were informed that they could discontinue their participation in the study at any time. Medical information and a brief psychiatric history were obtained including: age, occupation, duration of Parkinsonism and medication schedule including any recent changes.

Apparatus

Groups were arranged in a circle of chairs at the beginning of all exercise and dance/movement therapy groups. During dance/movement therapy sessions, the same music was used for all sessions. A professional photographer videotaped each group at weeks 0, 6 and 12 of the study. The videotapes were used to allow a neurologist to assess the severity of Parkinsonism, and for the development of a training film for dance/movement therapists.

Procedures

Design. Since the purpose of the study was to compare an established format (exercise) with dance/movement therapy, the study was designed to use each group as its own control in a crossover design. The measures of neurological status ("walking time") and psychological status (Beck Depression Inventory) were chosen for use on the basis of their ease of administration and numerical scoring. Each group was followed for a 12 week period, six weeks of dance/movement therapy and six weeks of a regularly scheduled exercise group. During the CC group the first six weeks consisted of dance/movement therapy sessions followed by six weeks of the exercise group. The order was reversed with the K group to control for practice or "training" effects. Family members often accompanied patients to the groups and were encouraged to participate during dance/movement therapy sessions. Some family members also participated in the exercise sessions.

Neurological Assessment. The severity of neurologic impairment was evaluated according to Hoehn & Yahr's method for staging of Parkinson's disease (Marsden & Schachter, 1981) as follows:

- Stage 1: Unilateral involvement, usually minimal or no functional impairment.
- Stage 2: Bilateral or mid-line involvement, without impairment of balance.

Stage 3: Impaired righting reflexes. Functionally somewhat restricted, but may be able to work. Mild to moderate overall disability.

Stage 4: Fully developed, severely disabling disease.

Stage 5: Wheelchair or bed bound.

Thirty of the 37 patients were evaluated by videotape and classified into one of the five categories by a neurologist. The other seven patients were not present before the beginning of the particular sessions when videotapes were recorded, and thus were not evaluated by the neurologist. Most patients were mildly to moderately impaired, i.e. 17 in stage two and 10 in stage three of the Hoehn & Yahr scale. No patients were in Stage 5 (wheelchair or bed bound), although some individuals required assistance in attending sessions. There was no apparent correlation between Hoehn & Yahr scores (using linear regression analysis) with either patient age or the duration of illness.

A checklist of daily activities was used to assess the functional disability of each patient. In addition, a series of brief tasks were devised by a neurologist for use during videotaping to survey functional neurological impairment. These tasks were videotaped at the beginning of the group session. The videotape included closeups of each patient while they were asked to:

1. state their name
2. stand from sitting
3. "make a face" (to allow assessment of facial expressivity)
4. draw a shape in the air with outstretched arm
5. rapidly tap the palm and back of their hand in an alternating manner on the other hand.

The videotapes were later rated by a neurologist.

Each patient's handwriting and drawing of an Archimedes spiral was also used to document neurologic status. Pre- and post-session measurements were taken by asking each patient to walk a distance of 32 feet, starting from a standing position, to the command of "walk as fast as you can towards me." For each patient, the walking time, handwriting and Archimedes spiral were recorded by the same examiner once during the six weeks of dance/movement therapy and once during the six weeks of exercise. Measurements for each patient were done at the beginning and end of the group session. Walking times were compared during dance/movement therapy vs. exercise periods for each group using the paired sample t-test for the 30 patients where complete data was available. Samples of handwriting and the Archimedes spiral were used only for illustrative purposes; no attempt was made to quantify differences between treatment groups.

Mood Assessment. The Beck Depression Inventory (Beck, 1970) is a 21-item scale which includes response items indicating physiological signs of depression, sense of unworthiness and self-derogation, items of hopelessness and suicide, and motivational symptoms. This test was administered before and after each six weeks of dance/movement therapy and exercise, respectively, to evaluate changes in psychological status/mood (i.e. at weeks 0, 6 and 12 of the study). It was chosen as a standardized, consistent measure that would not be sensitive to the theoretical orientation or inconsistencies of the individual administering it. Due to visual impairment or severe tremor it was necessary for a few patients to have the help of their spouses in filling out the inventory.

A Beck Depression Inventory (BDI) score of 10 or more is considered to reflect clinically significant depression (Schab, 1967); severity of depression was determined as per Beck according to the following BDI scores: nondepressed = < 10, mild = 10-17, moderate = 18-24, severe = 25-30. BDI scores for the periods 0-6, 6-12 and 0-12 weeks were analyzed for changes using a paired sample t-test for the 34 patients who completed the testing.

Format of Exercise group sessions. The exercise groups were led by their exercise leader; the authors participated along with the patients. A brief period at the beginning of the exercise group was used for mood and neurologic assessments. Then the exercise group leader began with a few introductory remarks such as current information on treatment of Parkinsonism followed by a structured routine of exercises. These included rowing movements, windmill movements of the arms and neck exercises. Most of the exercises involved only one limb or muscle group at a time. During the one-hour session there was generally minimal verbal discussion between group members.

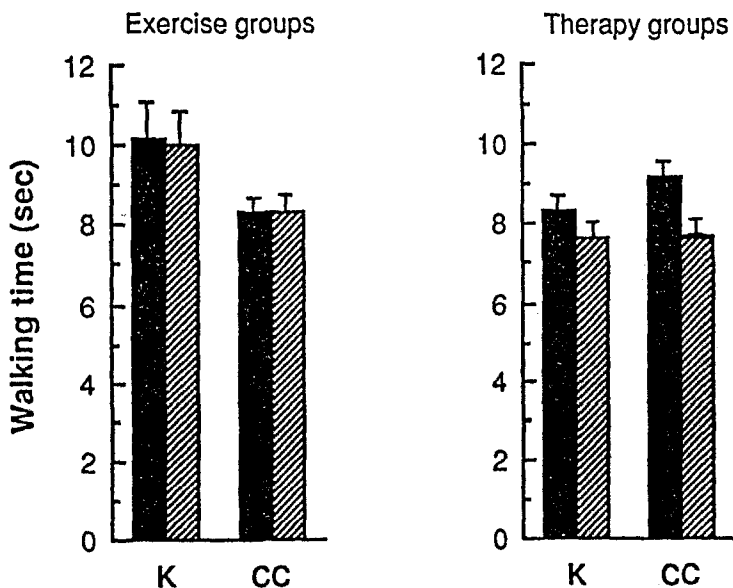
Format of Dance/Movement therapy session. The 60 minute dance/movement therapy sessions were co-led by the authors. The exercise leader participated in each session. Patients were informed that the dance/movement therapy group was an opportunity to explore movement, share and express concerns in a safe environment. They were encouraged to work within and explore their own movement ability within the group context. All dance/movement therapy groups consisted of a brief movement warm-up, development of a movement theme facilitated by the therapists and closure time where patients were supported in verbalizing their thoughts and feelings. Family members were encouraged to participate in both the movement and discussion. The therapists made themselves available before and after the group to answer questions and address individual concerns.

Results

Movement Initiation

Walking is an integrative act which can be a sensitive indicator of movement impairment. There was a statistically significant improvement in the speed of walking during the one-hour dance/movement therapy sessions compared to the exercise groups (K group: $p < .04$; CC group: $p < .001$, paired-sample t-test). There was also a statistically significant difference (two-tailed t-test, $p < .001$) between men and women in walking times. Women had longer walking times despite the fact that men and women were similar in age, duration and severity of Parkinsonism (Figure 2).

Figure 2



Walking times (number of seconds to walk 32 feet) were compared at the beginning and end of the session for each patient. Exercise was compared to dance/movement therapy for both the K and CC group using the paired-sample t-test. There was a significant decrease in the walking time during dance/movement therapy for both groups (K: $p < .04$, CC: $p < .001$). Data expressed as mean \pm S.E.M.

Beck Depression Inventory

Most patients reported only a few depressive symptoms and thus were categorized as nondepressed on the basis of their score on the Beck Depression Inventory. There was no significant change in BDI scores during the course of this study. As with walking time, we again saw a sex difference. Women reported more depressive symptoms at the beginning of the study. This difference has also been noted by Beck (1967). Although women had higher BDI scores, it is unclear whether this could be due to differences in the reporting of depressive symptoms or to a true difference in the severity of depression.

Discussion

This study shows that dance/movement therapy can improve movement initiation in patients with Parkinson's disease. The statistically significant change in walking times which involves movement initiation suggests that dance/movement therapy was providing more than just an opportunity for physical exercise. Since walking was tested at the same time of day for both exercise and dance/movement therapy groups, it is unlikely that fluctuation in drug levels could account for the improvement seen in the dance/movement therapy group. This change cannot be attributed to a training effect since the order of dance/movement therapy and exercise was reversed.

No statistically significant changes in depressive symptoms could be documented, although it was noted by the authors and family members that patients showed subjective improvement in mood. However, patients in the moderate and severe categories on initial testing, all showed a lower BDI score on follow-up testing over the twelve weeks of the study. This may suggest a reporting difference on re-examination or a therapeutic benefit. Further studies are necessary to document this.

The lack of a demonstrable change in mood (depression) could be due to several factors. As an outpatient group in a suburban area this population was ambulatory, middle-class and appeared to already have good support systems. On the basis of the depression inventory the majority of patients were classified as being non- or mildly depressed. For this reason the Beck Depression Inventory may not have been the most sensitive measurement tool. Another instrument might have been appropriate since verbal reports from patients and family, and the authors' own subjective assessment suggested that the dance/movement therapy provided many emotional benefits to patients. In fact, due to enthusiastic reports by patients in the first group, and a brief article in a patient-

sponsored newsletter, additional patients began attending the second group.

A number of difficulties were encountered in conducting the study. The first difficulty was identifying a sufficient number of suitable patients for the study. Surprisingly, contacting patient-based support groups was a more successful approach than relying on referrals from physicians in a research institution or private practice. Delays in initiating the study resulted from an apparent lack of administrative support from these facilities. This may be a general problem for investigators using "non-traditional" approaches such as dance/movement therapy. In addition, some patients either joined the group midway through or dropped out of the study, thus complete data could not be obtained on all patients. As a further complication of the experimental design, it was necessary to utilize the established exercise group leader although it would have been ideal if the leader was the same for both exercise and dance/movement therapy. To control for the presence of the dance/movement therapist as an influencing factor on outcome both therapists participated as members in the exercise group. The participation of family members could have influenced the results of the study. However, since frequency of family participation was essentially the same for both exercise and dance/movement therapy a significant effect seems unlikely.

The theme that was developed during each dance/movement therapy session incorporated increased movement range and exploration of affect using both nonverbal and verbal information. The group discussed the movement experience with the therapists who served to facilitate, focus and clarify associated thoughts, feelings and concerns. Many similar themes and issues evolved for both the CC and K groups. Initially, patients required reassurance of safety and support to increase risk taking within their own physical range of movement. There were frequent concerns and fears of loss of control or falling. Family members could be reassuring and supportive, or overinvolved, at these times. Many group members were fully involved in cooperative movement choices, some competed for attention, and others remained more withdrawn or limited in their group involvement. Much of the process time was spent in sharing common symptoms and difficulties, and in discussing the latest drug treatments or "cures." Often people compared the severity of their illness to each other or other patient groups which they knew to be "less functional."

Group members were able to incorporate new movement strategies or coping skills. Patients were delighted at the end of one particular session to skip around the room, some mentioning that they had not done this since childhood. One group also began a line dance, joined hands and made rhythmic loud stomping movements to assist in movement initiation and a cohesive group statement. Both groups used the time for

mutual sharing, exploring needs and new ways to assert themselves. All patients seemed to benefit from information and the sharing of their feelings and concerns. Towards the last few sessions of the six week period both groups expressed feelings of anger and sadness related to the termination of the dance/movement therapy group, as well as family and social concerns. A number of group members were tearful, expressing later what a meaningful and enriching experience the group had been for them.

It was noted following the CC dance/movement therapy group (when the therapists were present for the exercise group) that verbal processing continued to occur even though the therapists were not "leading" therapy sessions. Some patients wanted dance/movement therapy to continue. In contrast, there was no group processing during the K exercise group which preceded dance/movement therapy sessions.

Dance/movement therapy does address the whole person, both the physical and emotional aspects of disease. The use of dance/movement therapy may enhance drug therapy, might also be useful early in the course of Parkinsonism where many neurologists try to delay initiation of L-DOPA therapy (Adams & Victor, 1985) and in advanced stages to improve the psychological well being of patients who are relatively refractory to drug therapy. Dance/movement therapy may be equally useful for other groups of patients with neurological disabilities.

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