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Recommendations for Implementing Tango Classes for Persons with Parkinson Disease

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Abstract Several studies have recently been published regarding the physical and emotional benefits of Argentine tango dance for individuals with Parkinson disease (PD). These papers focused on the effects of tango interventions rather than methods used to implement and deliver the interventions. The focus of the present paper is on methods for implementing PD-specific tango programs, to facilitate safe and appropriate implementation of community-based partnered dance programs for this population. We report successful methods for an Argentine Tango-based class, but these recommendations could be applicable to other partnered dances.

Keywords Parkinson disease · Rehabilitation · Dance · Tango

Introduction

Individuals with Parkinson disease (PD), a progressive neurodegenerative movement disorder affecting more than one million Americans, experience gait and balance changes that adversely affect functional mobility, independence in performing activities of daily living, and quality of life (Bloem, Hausdorff, Visser,

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& Giladi, 2004). Not only does PD detrimentally impact motor ability, it also affects psychological and cognitive aspects of wellbeing (Schrag, Jahanshahi, & Quinn, 2000). In fact, psychological adjustment to the effects of PD can more greatly affect aspects of health related quality of life than disease severity (Suzukamo, Ohbu, Kondo, Kohmoto, & Fukuhara, 2006). Effective therapies addressing both motor and affective issues are clearly needed. Research has demonstrated that dance can be an appropriate activity for older and physically challenged individuals because of its benefits for both physical and emotional states (Kudlacek, Pietschmann, Bernecker, Resch, & Willvonseder, 1997).

Physical Effects of Dance

Specific impairments associated with PD include postural instability, stride-length and gait speed regulation, bradykinesia ("slowness of movement"), freezing of gait (an utter stopping of gait, as though feet were glued to the floor), decreased axial rotation, turning, movement initiation, and multi-tasking (Fahn, 2003; Hausdorff, Balash, & Giladi, 2003; Morris, Huxham, McGinley, Dodd, & Iansek, 2001; Schaafsma et al., 2003; Springer et al., 2006). Habitual participation in physical activity, even begun late in life, has been shown to improve postural and motor impairment in elderly individuals (Buatois, Gauchard, Aubry, Benetos, & Perrin, 2007). Increased gait speed following dance/movement therapy was noted in a cohort of people with PD (Westbrook & McKibben, 1989). Older adults who danced were more motivated to pursue healthy, exercise-related behaviors and demonstrated improved balance and functional mobility (Eyigor, Karapolat, Durmaz, Ibisoglu, & Cakir, 2009; Song, June, Kim, & Jeon, 2004). Dance may effectively address motor impairments brought on by aging and illness, as dance requires dynamic balance and adaptability to changing environments.

Affective Aspects of Dance

Individuals with PD have psychosocial needs that might be well addressed by group dance programs that increase social network size and quality, and encourage social interaction, particularly with loved ones. Most available rehabilitation programs for those with PD do not place enough emphasis on emotional goals related to personal relationships, which are of utmost importance to those with PD (McNamara, Durso, & Harris, 2006). As mood strongly impacts health, the expression of emotions, potentially through movement, can benefit health (Goodill, 2005, p. 44). When dance was used as therapy for older adults with dementia living in a care facility, spirits were lifted, agitation was reduced, and increased bonding was noted in residents and staff (Duignan, Hedley, & Milverton, 2009). Dance likely has a pertinent and lasting effect on psychological and emotional spheres that may greatly enhance its use as a rehabilitative physical activity.

Argentine Tango and Therapeutic Dance for Individuals with PD

Participation in Argentine tango lessons led to greater balance and complex gait task improvements in frail older adults as compared to a walking group (McKinley et al., 2008). The effectiveness of the partnered dance, Argentine Tango, on improving balance and mobility in individuals with PD was consequently investigated. Argentine tango was chosen because its steps, patterns, music, and partnered aspect were features that were thought to be of potential benefit for the specific motor impairments associated with PD (Hackney, Kantorovich, & Earhart, 2007a, 2007b). Furthermore, tango programs involve touch, encourage interpersonal connection with loved ones, foster community support, and may provide an attractive break in the daily lives of individuals with physical and cognitive impairments (Hackney & Earhart, 2009c; Hackney et al., 2007a). Individuals with idiopathic PD who participated in tango dance lessons improved on measures of functional mobility, balance, gait, and quality of life (Hackney & Earhart, 2009a, 2009b, 2009c; Hackney et al., 2007a, 2007b). Maintenance of these gains 1 month following a period of participation in dance was demonstrated (Hackney & Earhart, 2009d). The mechanisms by which tango is beneficial are not yet understood, but the improvements noted in the above research suggest that participation in tango may enhance the daily lives of individuals with PD.

Adherence to Physical Activity Program

Dance has been shown to promote enjoyment and foster interest in continuing participation (Belardinelli, Lacalaprice, Ventrella, Volpe, & Faccenda, 2008; Federici, Bellagamba, & Rocchi, 2005; Palo-Bengtsson, Winblad, & Ekman, 1998). While it is helpful to know that a tango-based rehabilitative program is effective at improving balance, mobility and quality of life, true measured success of an exercise program must take a crucial factor into account: *adherence*, in the sense of persistent participation. Generally, 60–85% adherence to physical activity in impaired elderly is considered very high (Fielding et al., 2007). In tango studies completed by Hackney & Earhart, participants were compliant with the regimen, reported favorable impressions and expressed interest in continuing (Hackney & Earhart 2009a, 2009b, 2009c, 2009d; Hackney et al., 2007a, 2007b). In fact, these tango programs had an attrition rate of only 15%, 83 participants of 98 completed the studies. Even a high volume, intensive tango program that met 1.5 hr, 5 days per week for 2 weeks, proved feasible, with low attrition for individuals with mild-moderate PD (Hackney & Earhart 2009a). The adherence to the tango dance program demonstrated by its participants was likely due to the program's social, supportive nature and a sense of community involvement, all of which enhance motivation to continue exercising.

Group exercise is a cost-effective, efficient method of administering treatment. Tango classes represent a form of group exercise for individuals with PD. The methods used in the tango studies completed by Hackney & Earhart were based upon the pedagogy of one instructor, a doctoral student in movement science and a professional dancer/instructor with more than 10 years of experience, who designed

and implemented the tango program for persons with PD, under the guidance of a PhD-trained physical therapist. The recommendations outlined here were derived from practical experience with implementing dance classes for research purposes over the course of 3 years. These methods for implementing a PD-specific dance program could fairly easily be disseminated to communities nationwide. This paper is a first step in that process of dissemination.

Recommendations for Implementation

The foremost consideration for a PD-specific rehabilitative dance program must be participant safety. Falls must *absolutely* be prevented. Only very experienced dance/movement instructors should instruct dance classes for those with PD. Preferably he/she should have experience instructing the elderly and/or physically challenged, possess national certification as a health/fitness/dance instructor, or be a physical, occupational or dance/movement therapist.

Volunteers to Assist

Before beginning a program, one should recruit volunteers to partner individuals with PD, and train the volunteers in proper partnering and spotting of participants who may be prone to lose their balance. Only healthy individuals, with no mobility or neurological impairments, should partner individuals with PD. Individuals who have experience caring for individuals with PD, such as spouses and caregivers, frequently show interest in participating and often serve as partners. Pre-health students recruited from local universities may be very willing to volunteer their time, and can be trained in spotting techniques for persons with balance impairments. Several "floating" assistants, e.g., healthy men and women, should circulate the room to serve as spotters and assist the instructor in monitoring students for instability.

The Class: When and (What to) Wear

Classes can meet for up to 1.5 hr provided there is a short break of 5–10 min. A study that investigated the effects of a high volume tango program met 1.5 hr per day, 5 days per week for 2 weeks (Hackney & Earhart 2009a). Participants were able to complete the program and experienced benefits in mobility and balance; however, for a continuous community program, 1 hr classes may be best as fatigue poses a difficulty for many individuals with PD. Also, benefits from tango were noted with programs that met in 1 hr classes, two times per week, for 10 weeks (Hackney & Earhart, 2009a, 2009b, 2009d; Hackney et al., 2007a, 2007b).

Participants should wear comfortable, loose fitting clothing that permits movement, and supportive, sturdy shoes. Although rubber soles are not ideal for ballroom dance, given the balance impairments of participants with PD, it may be wise to wear shoes with rubber soles in order to lessen any chance of slipping. In general, participants should wear shoes in which they feel comfortable, such as

those they use to walk some distance, or shoes recommended by a physician. Dress shoes with leather soles or athletic sneakers are acceptable. It is important that ladies not wear mules, sandals or clogs with no backs.

Class Structure

Table 1 provides information about the time allotment, musical selection, specific activities, and class objectives of each section of a 1 hr lesson. As instructors must monitor students for evidence of instability and fatigue, classes should ideally consist of no more than 12–15 people with PD. As students gather on the dance space, they should be encouraged to review previous material on their own, prior to the formal beginning of the session. When it is time for class to begin, offer a greeting and arrange students in a circle. Begin classes with a 7–10 min warm-up that emphasizes range of motion of all joints from neck to toes and rotational activity of the trunk. Upbeat Latin music, i.e., samba or salsa, works extremely well for the warm-up because of its clear and uplifting beats. Warm-up exercises might include head and shoulder rolls, ribcage and hip isolations, wrist, elbow and hip circles, boxing punches, and gentle deep knee bends. Many people with PD have difficulty with *contra-body movement* (the opposition of the ribcage to the hips) and with fully shifting their weight onto a single support. Repeated practice in shifting body weight entirely onto one foot may be especially important for gait improvement, since the swing to the next step cannot be managed without it. For individuals with more severe PD, many steps can be practiced in a seated position. In a case study, it was reported that a person with advanced PD, confined to a wheelchair, was able to participate and enjoy tango dance classes (Hackney & Earhart, 2009e). Although incapable of walking or standing, he would tap his feet and clap to the beat to help others keep time, smiling. He also could "lead" steps by maintaining his frame with his upper body and arms, and was very enthusiastic about participating, as was his family (Hackney & Earhart, 2009e).

The Ballroom Frame, Connection and Partnership

A traditional ballroom "frame," involving an embrace between the leader and follower, is the position maintained by the arms throughout all steps (in tango as well as other ballroom-based dances). If the participants are comfortable, the traditional frame can be used for classes. However, many participants with PD often prefer more symmetrical and supportive "practice" frames because they feel more stable. The "closed practice" position is an adaptation of the traditional frame: facing one another, participants maintain contact by holding hands with palms touching, with bent elbows, and maintaining forearms parallel to the floor. Palms up, leaders offer their hands to the followers who place their hands on top. Partners should maintain palmar contact, though this ability may vary among those with PD, depending on the rigidity of their wrists. An alternative to this closed practice frame is holding elbows instead of hands. Body weight of partners should be lightly directed toward one another so both individuals receive tactile information about

Table 1 One-hour Parkinson disease-specific tango class structure

Lesson plan	Time	Music	Activities	Objectives
Greeting and practice (of current movement vocabulary)	5 min	Tango	• Greet one another • Practice steps from previous class to music with partner, in an informal way. The instructor circulates to assist students	• Jog the memory • Establish community rapport • Allow participants to socialize • Work on movement vocabulary in friendly atmosphere
Warm up	10 min	Samba	• Stretch, limbering joints, warming muscles, breathing, alignment awareness • Instructors can add activities that are PD-specific to decrease rigidity and enhance contra-body movement	• Prepare the body physically and mentally for learning new choreography and concepts.
New step	10 min	Classic Argentine Tango	• Introduce new step and embellishment of the day • Break down footwork and describe shape of the movement • Use exercises to augment conception of new concepts • Music accompanies the shape of movement, but rhythms will be stressed in next section * *New steps should be introduced in 3 consecutive lessons and the 4th is completely review*	• Enhance skill of partnering • Address new motor challenges in footwork, placement, line, and embellishment. • Reinforce previous concepts of good body movement through the introduction of new motor skills
Music/rhythmic training	15 min	Ballroom tango with very strong beat	• Introduce simple rhythms and simple elements of beats- slow and quick. • Have class work on two new rhythms each class, one simple and one that is more challenging. • Students clap rhythm, then practice shifting weight in place, next they use the rhythm to travel around the line of dance.	• Training of the ear for the beat • Learning rhythms, and practicing them with footwork and decorative embellished steps • Understanding when to shift weight, controlling body movement through rhythm • "Playing" with rhythms

Table 1 continued

Lesson plan	Time	Music	Activities	Objectives
Amalgamation and encapsulation	17 min	Ballroom, Classic Argentine, Nuevo tango	• Add new step to previously learned steps, and combine these elements into interchangeable sequences. • Invite students to mix and match elements of a given pattern, rather than follow a strict order of choreography. • Continue to remind students of body posture, movement and aesthetic of line while dancing.	• Developing a "tool belt" of step elements that dancers can use interchangeably and creatively • Learning to connect one step to another in *enchainment,* while improvising and blending movement to music. Enhancing partnership skills.
Close	3 min	Classic Argentine Tango	• "Quiet Tango": Finish class by dancing quietly with one's partner: encourage communication with one's body and eyes. • Class traditionally finishes with applause, and instructor acknowledgement of all students' accomplishments	• Creating a sense of accomplishment and a moment of reflection for the experiential nature of the class.

their partner's axial placement, which is especially important when individuals with PD walk backward.

Regardless of gender, it is recommended that participants learn both leading and following roles, to ensure that all participants with PD fully explore their motor repertoire. By dancing both roles, each participant practices moving in both the forward and the backward direction. In addition, while in the role of leader, participants practice production of self-directed, internally generated movements. While in the role of follower, participants practice responding to external cues from the partner. Furthermore, changing roles continually challenges those with PD to attend to their own movements, which may be crucial to their motor rehabilitation. With careful concentration on critical aspects of movement, participants with PD can achieve movement amplitudes of nearly normal size (Baker, Rochester, & Nieuwboer, 2007; Morris, Iansek, Matyas, & Summers, 1996; Morris et al., 2001).

After both partners have performed leading and following roles (approximately 5 min or after one tango song) rotation of partners should occur. The person who "followed" first should rotate to the next person in the line of dance, the traditional counter-clockwise direction of dance traffic around a room. The instructor should note variation in impairment among participants with PD and consider this when assigning partners. An instructor may feel it safer to assign certain volunteer partners to certain persons with PD, depending on skill level of the former and disease severity of the latter.

Balance Training and Modification of Tango Steps

During therapeutic dance, a prime goal for individuals with PD is to move with a hallmark of dance training: dynamic balance. This involves moving the center of mass beyond the range of the base of support, and re-achieving balance with the next step. Steps that accentuate and challenge dynamic balance are necessary. For people with disabilities, many traditional tango steps may need to be modified, i.e., the *molinete* ("windmill, wheel": grapevine pattern of the feet, performed in a rotating circle around the leader, which involves extensive and continuous contra-body movement) and the *cruzada* ("crossed": stepping backward, then crossing one foot over the other tightly with the succeeding backward step). Traditional foot placement for these steps may be too challenging to the stability of the average participant with PD. The *molinete* can be modified by simply performing grapevines in parallel, emphasizing the turn of the hips before taking a step. The *cruzada* can be modified by not crossing the feet too tightly. Pivoting is difficult for individuals with PD, but turns can be accomplished with *more* steps of *lesser* rotational amplitude.

When beginning classes, one must teach weight shifts while maintaining the frame, then progress to moving synchronously with a partner in forward, backward, and side steps while maintaining connection. This sequence is then followed by travel around the line of dance, interspersing side and back steps. The next concept to introduce is "outside partner," in which one walks quite closely to the outside of the partner's feet, to the left or the right, but with one's center directed toward one's partner. Rocking steps and crossing steps (*cruzada*) may be introduced to students next. After these key basics are explained, other typical tango steps, i.e., *corte*,

amargue, *parada*, *mordita* and *barrida*, can be introduced. *Ochos*, or 'figure 8's', are traditionally danced forward and backward as a half pivot on single support performed by the follower. These important and typical tango steps need to be modified for most with PD, and *ochos* can be danced with three steps to the traditional one pivot. Embellishments, including knee lifts, toe taps, and circling the feet on the floor (*dibujo*) can also be added into the dance to mark time or to reinforce the practice of standing on single support. More explanation of choreographic pedagogy is explained in Hackney et al. (2007a).

Repeatedly, instructors should review main concepts, i.e., how to change weight and walk backward, posture, alignment and honing partnership skills by maintaining connection through the frame. Participants should be given ample time to practice steps and develop a measure of confidence in their abilitiy to perform these steps; however, some individuals with PD will express a preference for learning fewer steps but repeatedly practicing them. Nevertheless, motor skills required to complete activities of daily living often require adaptability to ever-changing and unpredictable environments, in which we all find ourselves. While the practice and rehearsal of known steps may reinforce "healthy" movement patterns, it may not encourage adaptability. By continually exercising mental and motor capacities through the study of an ever-expanding motor repertoire, those with PD may be better prepared to shift quickly into an appropriate motor skill and thus adapt to a sudden change in environment. Learning new movement can be difficult and frustrating for many people with PD, but continuous encouragement allays most concerns. The act of learning, practicing, and exploring new movement should be emphasized over the perfection of any one step. When instructors keep the class mood light and fun, frustration is minimized. Students should be encouraged to inform the instructor of absences, and the instructor should call them, if they miss a lesson unexpectedly.

Selection of Music

Dance instructors must teach music comprehension and listening skills. After the introduction of the "paso del dia" (step of the day), a substantial portion of the class should be devoted to rhythmical training (Table 1). As individuals with PD face difficulty with initiating, enacting, and completing movements, they need musical cues to be simple and clear. Although beautiful, some Argentine tango recordings are very sophisticated for beginners' ears, which may make it difficult to clearly distinguish beats. Ballroom tango recordings with a clear, simple beat and slower tempo appear easiest for individuals with PD to hear and interpret appropriately with movement. As dance students grow in musical knowledge and appreciation, teachers can experiment with more sophisticated musical selections.

Ending of Class

Everyone—participants, volunteers, and loved ones—should experience success at completion of class. Applause at the end of the class is traditional and can bring closure to sessions while acknowledging participants' accomplishments. With a

positive attitude and by fostering an environment of playful movement discovery, instructors communicate to their students that they are needed and wanted at their dance classes (Hackney et al., 2007a).

Conclusion

This work provides recommendations for implementing a tango-based partner dance program to individuals with PD in the community. Activities that encourage social interaction are necessary to encourage wellbeing of those with PD (Simpson, Haines, Lekwuwa, Wardle, & Crawford, 2006). Tango may engage and be particularly helpful for participants with PD, because it is effective at addressing motor impairments: it is progressive, i.e., the participant is always learning, it fosters teamwork and community involvement, and it may aid relationship-related goals. Dance may be particularly effective over the long term as it is an enjoyable activity that interests and engages older individuals. Engaging and enjoyable exercise programs are greatly needed to prevent boredom and subsequent withdrawal often encountered with less interesting ones. While the majority of mature American adults does not achieve the recommended daily amount of physical activity (Macera et al., 2005), activity levels in individuals with PD are even lower than those of age-matched controls (Toth, Fishman, & Pehlman, 1997).

This work is one of the first to recommend the use of improved rehabilitative movement approaches employing partnered dances in order to improve quality of life while addressing functional mobility deficits in individuals with PD. With skilled and knowledgeable instructors, careful planning, and foremost consideration of safety, a partnered dance program can provide positive effects in physical, emotional, and mental states for many individuals with Parkinson Disease.

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