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## An Exploration of Dance Therapy, its Origins, and its Applications in Parkinson's Disease

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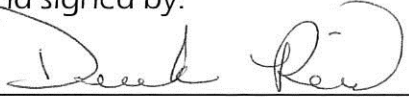
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**An Exploration of Dance Therapy, its Origins, and its Applications in  
Parkinson's Disease**

A Thesis

Presented to the Department of Dance

Jordan College of the Arts

and

The Honors Program

of

Butler University

In Partial Fulfillment

Of the Requirements for Graduation Honors

Emilia Anne Floody

March 28, 2017

## Abstract

Throughout history, dance has been used as a means of promoting health and well-being and for healing the sick. These practices date back to some of the earliest Neolithic societies with the advent of the circle dance in shamanistic cultures and continue into today's society. Notable examples of healing dances include dances devoted to Apollo in ancient Greek culture, the dancing manias of medieval Europe, and the tarantism of southern Italy that dates back to the fourteenth century. Today, the primary role of dance in healing is the use of dance/movement therapy which, according to the website of the American Dance Therapy Association (ADTA), aims to use movement to "promote emotional, social, cognitive, and physical integration" (ADTA; n.d.). This thesis explores the extent to which dance/movement therapy evolved from these historical dances of healing and its practical applications in treating contemporary diseases and disorders. In particular, emphasis is placed on the effectiveness of dance/movement therapy as a treatment option for individuals with Parkinson's disease, a progressive neurodegenerative disorder affecting approximately six million people worldwide, the incidence of which is expected to increase dramatically in coming years as the result of an aging population. The quantitative impact on both physiological and psychological symptoms of Parkinson's is explored, as is qualitative evidence derived from interviews and surveys conducted with participants, caregivers, and instructors. In light of the evidence, potential avenues for further research or for widespread implementation of dance therapy programs specifically designed for individuals with Parkinson's disease are explored.

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### **History of Healing Dances**

Dance has existed as an important element of culture since the earliest societies. Evidence suggests that dancing first appeared in humans during the early cultures of the Protolithic period. This evidence primarily takes the form of rock paintings, which are often abstract and cannot be interpreted literally due in part to a lack of contextual detail. Sachs (1937) suggests caution when interpreting any of these rock paintings that appear to suggest the presence of dance, as there is a substantial risk of imposing one's expectations onto the paintings. However, Sachs notes that behavior resembling dancing is present in apes, suggesting that dance may have passed to humans through an evolutionary link. Should such a link exist, dance could be expected to be found in every stage of human development, including these early protolithic cultures (Sachs, 1937). Regardless of origin, dance has been found consistently as a part of cultures since the Neolithic period, when it developed alongside shamanism, though it has evolved and changed substantially as societal influences have grown, changed, and developed.

Shamanism, or some similar form of religion, appeared in early societies around the world and still exists today. It is defined primarily as a religion based on the belief in spirits and gods that control events both involving the environment and individual people, and involves the use of ritual for communication both within the community and with the spirits (Winkelman, 2009). Environmental events that can be influenced by such spirits included events impacting the health and success of the entire community, such as the coming of rains or success in a hunt. On an individual

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level, in contrast, spirits might cause illness and death or influence the fertility of individuals (Marshall, 1969). The role of the shaman in such cultures is to facilitate communication between the community and these spirits. In some cases, this is achieved through the ongoing possession of the shaman by a spirit, while in others the shaman has the ability to call a spirit to possess him at will (Hanna, 1988). Most cultures designate men as shamans, although some allowed women to act as shamans in a limited capacity (Winkelman, 2009).

Shamans are generally trained by existing shamans beginning from a young age. They may be selected either through association with an existing shaman, for example by being the son of the shaman, or by the spirits through a possession or highly spiritual encounter. In some cases, such an encounter is imperative for a new shaman as it provides the source of their ability to communicate with the gods or spirits (Winkelman, 2009). Different cultures assign different explanations for this power possessed by the shamans, though their roles within the community are fairly consistent across cultures. For example, the !Kung bushmen describe the power of shamans as stemming from the flow of a substance referred to as *n/um* which is contained both within the body of the shaman and within other elements of nature that are seen as containing power (Marshall, 1969). In the case of the !Kung, *n/um* is believed to be given to an individual by the gods, but can weaken or run out over time. Notably, all men of the !Kung contain some level of *n/um*, making all technically medicine men. However, not every medicine man actively practices as a shaman at any given point and may cite, for example, low levels of *n/um* as a reason for not participating in healing (Marshall, 1969).

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The role of a shaman in a culture generally extends beyond communicating with spirits. A shaman may be responsible for maintaining and passing on knowledge of herbal remedies for common physiological ailments, as well as information regarding cultural rituals and traditions (T. H. Lewis, 1990). This responsibility is critical, as in societies without written words or records it is easy for information to be lost to time due to a lack of individuals prepared to pass it on precisely. Without a formalized mechanism such as this for passing on critical information, it would be simple for knowledge to become warped or lost over generations of being passed on in a casual context and to any interested party. Training young members of society to serve as shamans gives an opportunity to present information to an individual who is prepared to actively participate in learning and who has been selected for their chances of future success. Like an apprenticeship, this training allows future shamans to observe and participate in the important aspects of the shaman's work before being given the task of taking over the work himself (T. H. Lewis, 1990). The process of becoming a shaman culminates in a "spirit journey" or quest involving an altered state of consciousness (ASC) which can be entered through the use of drumming and dancing, fasting, extreme pain, or psychoactive substances (Winkelman, 2009). An additional key responsibility of the shaman is the performance of rituals and dances used to communicate with and appease the spirits. It is in the context of these dances that evolutionary connections of dance between humans and primates are the most evident (Winkelman, 2009).

In early societies, dances were typically done in a circular pattern, often revolving around some sort of fire or altar (Sachs, 1937). There is little contact



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during these dances, except potentially in the medicine dances during which the shaman or medicine man may touch the individual to be healed. Music, comprised of chanting and percussive sounds created with drums, rattles, or the human body itself, often accompanies the dancing (Winkelman, 2009). In many cases, the dancers are distinguished from accompanists by gender. Many of these defining elements of early rituals and dances are visible in similar forms in primate behavior. For example, chimpanzees have been observed participating in both drumming and chorusing behaviors, similar to the drumming and chanting observed during shamanic rituals. Although the drumming of chimpanzees is intended primarily to communicate over long distances, research has found that the drumming frequencies utilized by chimpanzees fall within the range used in most shamanic rituals (Winkelman, 2009). The act of chorusing bears a closer resemblance to the chanting used in rituals as it serves a social function as well, allowing the chimps to navigate social tasks such as mating as well as giving them a means to communicate emotional states (Winkelman, 2009).

While chimpanzees do not generally participate in activities that humans would recognize as dancing, they do have behaviors that appear similar to some ritualistic behaviors. For example, during a thunderstorm male chimpanzees may begin to howl, stomp on tree branches, wave their arms, and jump or leap about (Winkelman, 2009). These displays of aggression are remarkably similar to those demonstrated by the !Kung bushmen during the course of their medicine dance. As the !Kung believe that disease is caused by spirits which must be driven away, a portion of the ritual entails the medicine men running into the darkness where the

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spirits are said to lurk, putting on shows of aggressive behavior in order to drive away any spirits intending to cause harm (Marshall, 1969). In addition, the behaviors appear to be related as both are in response to potential threats, with chimpanzees responding to the environment while the !Kung focus on the divine. Based on the available evidence, Winkelman argues for a biogenetic foundation of shamanism, citing the similar ritualistic behaviors found in both chimpanzees and humans and providing support for the argument suggested by Sachs for an evolutionary link in dance (Winkelman, 2009; Sachs, 1937). The presence of such a link would indicate that dance is an integral and universal part of the human experience, explaining its predominance as a critical part of rituals and of healing.

The majority of healing dances that have been described in the literature still exist in some form today, although not necessarily in their original context. One example of a well-preserved healing dance is the medicine dance of the !Kung bushmen. As previously mentioned, the !Kung believe that illness is caused by spirits, called //gawwa-si, which serve the god #Gao N/a (Marshall, 1969). These spirits may do either harm or good, although the !Kung tend to expect harm rather than good. Although illness is perceived as being caused by a divine source, the !Kung have been given a way to combat such forces due to the presence of *n/um* within them (Marshall, 1969). *N/um* is one of the key elements of the medicine dance, with multiple components of the ritual involving the preparation the *n/um* for healing. A medicine dance for the !Kung is not performed exclusively or even regularly in times of illness, and the purpose is primarily to prevent potential illness rather than to heal existing maladies. As a result, all members of the community are

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healed during each dance rather than focusing on one particular individual in need of healing (Marshall, 1969). Unlike many other rituals, there is no advance planning required in order to begin the medicine dance. Any member of the community can initiate a dance, and a dance can last for any amount of time from only a few minutes to all night (Marshall, 1969).

The dance begins with the women forming a seated circle around a small fire and beginning a pattern of chanting and clapping. The men then begin to dance in a circle around the women, forming a groove in the dirt by following the same path repeatedly. The dance consists of one primary step, designed to move the dancers around the circle while creating rhythmic, percussive noises that accompany the women's chanting and clapping (Marshall, 1969). As the dance continues, the *num* of the men begins to boil. This process is facilitated by the use of hot coals and embers, which the men place on themselves. It is possible that this process of inflicting pain through the act of burning oneself may contribute to the induction of an altered state of consciousness for the medicine men, allowing them to begin to heal (Marshall, 1969). Not all the men participate in the healing, and those that do are not necessarily in a trance state. However, the majority do enter this trance and proceed to select individuals at random to heal until all have been healed. Some medicine men participate in the healing until they collapse from exhaustion, while others choose only a few individuals to heal or continue to dance around the circle (Marshall, 1969). The process of healing itself involves the medicine man or men flapping his hands over the person to be healed in order to draw the spirit out and into himself. He then makes a series of vocalizations including screams or groans as

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he expels the spirit from his body back into the world, and the person is protected from any illness which that spirit intended (Marshall, 1969).

The concept of illness as caused by spirits or divine intervention is a crucial component of shamanism and as such is the foundation for numerous medicine dances beyond that of the !Kung. However, not all dances have been preserved as has that of the !Kung, which existed in roughly its original form for extended periods of time due in large part to a lack of outside intervention (Marshall, 1969). Some, such as the Zar, which is performed in parts of Africa and the Middle East, have continued to exist even as society has changed around them. The Zar is an ancient healing dance which originated at approximately the time of the Ottoman Empire and which is still performed today, although it has changed slightly over time as differing cultural influences such as religion have altered the face of society (El Guindy & Schmais, 1994). Like the !Kung, those practicing the Zar believe that illness is caused by spirits. These spirits are known as *jinn*, and in cases addressed by the Zar dance share a name with the dance intended to heal the disease they cause (El Guindy & Schmais, 1994). The Zar causes disease through the process of invaded possession, in which a spirit possesses an individual without that individual's invitation. Certain factors can increase one's likelihood of being possessed by a *jinn*. For instance, a genetic predisposition or exposure to individual or social stressors may lead to one's possession. Symptoms of Zar possession generally manifest as psychological disorders rather than physiological, with physiological illness generally caused by other types of *jinn* (El Guindy & Schmais, 1994).

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Although the Zar is performed in multiple countries and under differing circumstances, there are several factors that are constant in every version (El Guindy & Schmais, 1994). For example, the use of the Zar to cure possession by a *jinn* is universal, as are the interactions and relationships with the spirits. An additional constant in the ritual is the predominance of women. Nearly all of those involved with the Zar are women, whether they participate as a healer, are healed during the ritual, or are in attendance for another's healing (El Guindy & Schmais, 1994). The healing is done by a woman known as the Kodia who has been possessed herself, but who has accepted the possession as part of her life and the *jinn* as a part of herself. A man may also serve as a healer if he has done this, but he cannot inherit possession as a woman can and as a result it is rare to find a male Kodia (El Guindy & Schmais, 1994). The ritual itself may be done as a private or a public ceremony, with private Zars involving only the woman's close female family and friends as spectators. Public Zars, in contrast, function similarly to a support group, with a group of women attending weekly sessions. These group Zars have developed primarily in Egypt and involve socialization and dancing that are not necessarily as regimented and form-based as the traditional Zar ceremony. In addition, women are allowed to bring a male family member with them to the public Zar, in contrast to the private ceremonies which only female family may attend (El Guindy & Schmais, 1994).

The ceremony occurs in a room with an altar in the center, around which the dance occurs. As guests arrive, they are expected to give an offering of money before entering. The Kodia and her assistants sing and use percussive instruments such as

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tambourines to provide accompaniment. Costumes are provided for the dancing woman, with the number of costumes corresponding with the number of *jinn* believed to be possessing her. According to El Guindy and Schmais (1994), these costumes allow the woman to let go of her inhibitions or self-consciousness by taking on a persona. The costumes may also relate to a figure with more authority than she herself has, allowing her to take on characteristics or traits which she does not normally possess. The sick woman begins to dance, with the intensity of her dancing serving as a signal to the Kodja regarding whether she has identified the correct *jinn* (El Guindy & Schmais, 1994). As the dance progresses, she enters into a possessive trance. At this point, percussive stomping by the dancing woman compels the *jinn* to reveal itself. Once the *jinn* has been properly identified, it can be appeased so that it will leave the woman's body and she can be made well. This appeasement is achieved through the use of an animal sacrifice, with the sick woman contributing an animal. Should she not be healed after the sacrifice, it is decided that the sacrifice was not significant enough and the process must be repeated with a larger animal until she is cured (El Guindy & Schmais, 1994).

A key feature of *jinn* possession is the perception of possession as an ongoing state of being rather than a temporary event (El Guindy & Schmais, 1994). Those who become possessed and who are cured through a private Zar ritual are not healed entirely and remain vulnerable to future possession. This can be avoided only by holding a Zar for the woman every year from the time she is first possessed (El Guindy & Schmais, 1994). Due to the continuity of this process both in the weekly public Zars and the yearly private ceremonies, the Zar has become known as

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a possession cult. Not only do participants experience spirit possession on a regular basis, but the Kodia herself lives in a state of perpetual possession (El Guindy & Schmais, 1994). Possession cults such as this exist or have existed in cultures worldwide and often develop as a response to societal influences and changes which cause major shifts in lifestyle which ultimately lead individuals, particularly women, to participate in the cults (Lüdtke, 2009).

In the case of the Zar, a major contributing factor as presented by El Guindy and Schmais (1994) was the growing influence of Islam. According to Boddy, women in Islamic cultures tend to face suppression in that they must obey their husbands in exchange for the dowry the husband provides (As cited in El Guindy & Schmais, 1994). Women also face a lack of legal power in relation to their marriages, although this is a more contemporary development and was not always the case historically. There were, however, additional factors historically which El Guindy suggests may have contributed to the proliferation of the possession cults. For example, the practice of early marriage allowed girls as young as twelve to thirteen years of age to be married to often older men. This was often done as a method for ensuring the "purity" of the young brides, and preventing them from having any unsanctioned romantic relationships before they could be married off. However, it also deprived many young girls of a sense of agency and of control over their own lives by establishing early on where they would spend the rest of their lives and with whom (El Guindy & Schmais, 1994). These girls were given no opportunity to voice their views on the matter, and as such their futures were decided without them. This set a precedent for their future marriage, in which they continued to be

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expected to submit to the decisions of others. As a result, many women may have turned to the Zar as a place in which they might express themselves freely (El Guindy & Schmais, 1994).

By limiting the ability of men to participate in the Zar, women created a place in which they were dominant, in contrast to their position in the public sphere (El Guindy & Schmais, 1994). The use of costumes to take on roles representing positions of authority not traditionally accessible to women allows for a brief escape from the reality of their lives and from the lack of agency within them, and the entry into an altered state of consciousness contributes to a sense of cathartic emotional release. The experience of participating in the Zar with a group of women who are all experiencing the same hardships, as occurs in the public Zars of Egypt, may contribute to a sense of community and of belonging (El Guindy & Schmais, 1994). The repeated nature of the dance allows it to function similarly to a support group, with members growing familiar with one another and expecting to see each other at every weekly meeting. Finally, even in cultures like those practicing Islam where women's sexuality is highly restricted due to the danger of temptation for men, dancing can be condoned in the context of a ritual such as the Zar, where it is not the women who choose to dance but the *jinn* who require it. As the women are compelled to dance in order to rid themselves of harmful possession and thus have no alternative to dancing, it must be accepted by society and by religion (El Guindy & Schmais, 1994).



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The dancing manias of thirteenth century Europe are another example of dancing that occurred as a response to a changing social and religious climate (Donaldson, Cavanagh, & Rankin, 1997). During these episodes, large crowds of people gathered and danced frantically to the point of exhaustion, with numerous records existing of individuals dancing until they collapsed or their hearts gave out. In some instances, these episodes coincided with specific saints' days. More often, however, a single person or group of people would simply initiate a dance, leading to others joining and forming crowds as large as one thousand (Donaldson et al., 1997). These manias often took place in churchyards or in graveyards, and could spread from person to person simply through proximity, with no physical contact required (Schmitz, 1982). The cause for the manias has proved difficult to determine, although they have been the subject of numerous books and papers since they began. An early explanation was the possibility of infectious disease. During a period marked by large-scale diseases such as the black plague, this appears at first glance a feasible option. However, the ability of the manias to spread through the mere sight of one who is infected makes this explanation seem improbable at best. Although alternative explanations including epilepsy or the consumption of contaminated rye have been presented, it is in fact the explanations that were given at the time of the manias that give the most insight as to the true cause (Donaldson et al., 1997).

The development of the dancing manias has been tied to the prominence of the Christian Church in Europe (Brooks, 1982). In the early years of Christianity, converting was a simple matter, requiring very little on the part of the convert. As

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the Church expanded, individuals were expected to renounce their former religions and convert to Christianity. However, as individual beliefs were difficult to police, many who converted did so only in name, maintaining and practicing their own religions in secret (Schmitz, 1982). Many of these religions contained components of ritual, with sexuality and violence often incorporated. The Church found that these dances and rituals violated the standards of morality which they advocated. As a result, legislation was passed limiting when and where dances could be performed, as well as which dances were acceptable for performance (Brooks, 1982). However, this legislation was not uniformly enforced and was largely ignored. In addition, divisions formed within the church between those who perceived dance as representing excess and those who believed that dance was an important and sacred element of religion and should not be banned. As legislation continued to pass without being enforced, the church escalated to a full ban on dancing, with exceptions for only very specific circumstances (Brooks, 1982).

This ban, too, was met with criticism from within the Church as well as outside of it. Again, many Church officials, especially those at the lower levels of the Church, chose not to report episodes of dancing and some were even recorded as having participated in dances themselves (Brooks, 1982). The Church belatedly provided religious explanations for their dancing ban, citing their long-held belief that the body is a source of sin. Dancing, as a source of worldly pleasure, was determined to be a sin equivalent to drinking or fornication. However, this after-the-fact justification lends support to the idea that the church regulated dancing not due to its status as sin, but instead to control the practice of religions other than

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Christianity, particularly by those who claimed to have converted. This idea is supported in part by the existence of early writings from within the Church which told of the importance of sacred dance, which played a large role in the Church as well as in the ritual of the Mass (Schmitz, 1982).

Among the only dancing sanctioned by the Church was the newly-developing area of folk dance, which was designed to comply with the newly imposed regulations (Schmitz, 1982). Folk dances lacked the pantomimes of ritual dancing, which contributed to their approval by the Church as without pantomimes it was difficult to express themes that may have been construed as violent or vulgar. In addition, the strict structure of the dances ensured that they were nearly identical every time they were performed, serving as a reassurance for Church officials that the dances would remain in their censored form. Without the ability to perform old religious and ritual dances without fear of persecution, people turned to folk dances to provide a sense of community and to maintain elements of the religions they had formerly practiced (Schmitz, 1982). Some such elements were visible within the dances themselves, such as the use of the circle which had played a critical role in early rituals. The separation of dance from religion by the Church also fundamentally altered the meaning of dance. While previously dance had been linked with important elements of spirituality, allowing for a sense of connection with something larger or more important than oneself, it now served as a vessel for socialization and for the passing on of cultural heritage (Schmitz, 1982). In this way, dance shifted towards a focus on performance rather than on the experience of dancing. In large part, this emphasis on dance as performance was maintained

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through the development of folk dance and ballet until the advent of the modern dance movement.

Despite the Church's regulations and the existence of folk dance as an outlet for those desiring to dance, some dance continued to occur beyond the reach of the Church. The dancing manias serve as an example of this. According to Donaldson, Cavanagh, and Rankin (1997), the common explanation at the time was possession by demons, often brought on by baptisms invalidated by corruption within the Church. As in the case of Zar possession, this explanation freed affected individuals from any potential repercussions by suggesting that they themselves were not in control of their actions. By blaming demons, known enemies of the Church, victims ensured that their accounts would not be doubted. The Church's official recognition of demons meant that they could deny neither the involvement of demons nor the explanations of the dancers without also casting doubt on their own use of demonic possession as an explanation for other negative events. By extension, therefore, had the Church attempted to reject the idea that the dancing manias were an uncontrollable impulse caused by demonic possession they would have contributed to the discrediting of their own system of beliefs. As a result, the only options for the Church when faced with the conundrum of the dancing manias which they were fully unable to control were to reject them and risk facing backlash for their perceived hypocrisy, or accept them. Faced with this choice, the Church chose to allow dancing when it occurred in the context of the manias rather than place in jeopardy their status of authority throughout Europe.

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The dancing manias bore similarities to the Zar in more than just the use of possession as a way to avoid the possible repercussions of dancing. The manias were often utilized as a means to convey emotions that could not otherwise be expressed. For example, multiple cases have been recorded of manias occurring at the time of the Black Plague. Hanna (1988) states that these dances were performed largely as a way to allow people to confront their own mortality, as well as to “deny the finality of death” (p. 55). Due to the rapid spread and high mortality rate of the plague, all were forced to come to terms with the idea of death as they found themselves surrounded by the dead and dying each day. By utilizing dance as a form of cathartic expression, individuals were able to address their feelings about death as well as their knowledge of the likelihood of their own impending deaths. According to Hanna, the activity of the dance also provided a sharp contrast to the stillness of the surrounding death (1988). This served as a reminder to the dancers that they were not yet dead, and that they should experience and enjoy the movement of life while they were still able.

Not all of the dancing manias revolved around death. Possibly the most well-known of the dancing manias was tarantism, which occurred in southern Italy beginning as early as the tenth century and continuing through to the fourteenth, although some still perform the dances today (Lüdtke, 2009). It has been suggested that tarantism may trace its roots back to the ancient Greeks, who performed dances to many of their gods including Apollo, the god of healing, although others have discounted this claim due to the extended period of time between the end of these dances and the first occurrences of tarantism (Donaldson et al., 1997; Lüdtke, 2009;

Sachs, 1937). While it is considered a dancing mania similar to those occurring elsewhere in Europe during the same period, tarantism was distinct in many ways. Notably, unlike the other dancing manias tarantism did not rely on possession to explain the uncontrollable fits of dancing. Instead, those who experienced tarantism, known as tarantatas, claimed to have suffered the bite of a spider. Although it is not known exactly which spider is responsible for tarantism, there are two primary candidates: *Latrodectus tredecim guttatus* and *Lycosa tarantula*. These spiders are often referred to by their common name, the tarantula, from which both tarantism and the tarantatas derive their names (Lüdke, 2009). According to Lüdtker (2009), few cases of tarantism have shown evidence of an actual spider bite preceding the episodes of dancing. In addition, experiments involving the spider have been unable to demonstrate that the bite contains venom that would negatively impact human systems (Donaldson et al., 1997). This suggests that the spider, like the demons of the other dancing manias, served primarily as justification for the dances. Indeed, it has been argued that the bite of the spider was merely a metaphor for the social limitations and repression faced in particular by women as their roles were changed by the expansion and growth of Christianity as well as by other societal changes (Lüdtker, 2009).

Like the Zar, tarantism is considered to be a possession cult, in part because of its recurrence. Once individuals have been bitten, they must participate in the dance yearly for an indefinite period, and many individuals have been known to continue the dance for life (Lüdtker, 2009). The continuous nature of tarantism has contributed to the difficulty in finding a scientific explanation as few have been able

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to provide sufficient evidence to support a hypothesis explaining both the symptoms and the recurrence. The lack of evidence for an alternate solution also supports the argument that tarantism was in fact an expression of repressed emotions or opinions rather than an uncontrollable response to the bite of a venomous spider (Donaldson et al., 1997). Additional support is given by the continued presence of tarantism in Italy to this day. Although tarantism as a social phenomenon has largely died out, there are still those who participate in yearly dances or claim to have felt the "bite" of the spider. Today, however, the dances are no longer met with hostility from the Church and as a result tarantatas may be more open about their experiences with tarantism (Lüdtke, 2009). Lüdtke, for example, writes of a young woman who has been affected by tarantism and who readily admitted that the bite she felt was not the result of a true spider bite but was rather the "bite of the earth," which helped her to enter into an altered state of consciousness (2009, p. 126-7). Although tarantism may not have sought to cure the effects of a tarantula's venom as was originally suggested, the dancers may have made use of these altered states of consciousness as do the !Kung to heal emotional or psychological distress.

Most of the dances presented here share a common thread in that the dance is or was not performed to cure physiological illness but instead to heal psychological distress or disorder. This distinction between curing and healing is important. As noted by Halprin (2000), "curing" entails the removal of a disease from an individual, for example by administering an antibiotic in order to cure a bacterial infection. "Healing," however, emphasizes returning a person to wholeness by

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focusing on all aspects of the person, including the mental, emotional, and spiritual in addition to the physical (Halprin, 2000). Contemporary Western medicine places primary importance on the curing of disease rather than on the healing of the individual, while methods such as dance/movement therapy emphasize the process of healing. In shamanism, however, through which each of these dances is linked, curing and healing are brought together (Lee, Ahn, Kim, Jeong, & Yoon, 2015). This is visible primarily in the fact that while these healing dances exist and are used in many cases of disease or disorder, the shamans in cultures utilizing such dances also make use of various herbal healing strategies. Lee et al. (2015) suggest that the fields of dance and medicine have branched off from their common origin of shamanism, indicating that both have the capacity for use in the process of healing. This strongly supports the usage of dance as a tool for healing, a use which has begun to be realized only relatively recently with the advent of dance/movement therapy.

### **Dance/Movement Therapy**

Dance/movement therapy (DMT) is a relatively recently-developed field which has undergone several changes in content and definition since its origin in the 1940s. Currently, the website of the American Dance Therapy Association defines DMT as “the psychotherapeutic use of movement to promote emotional, social, cognitive and physical integration of the individual” (American Dance Therapy Association [ADTA], n.d.). While there are standardized training programs for DMT, including several graduate programs in the United States as well as abroad, each



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dance/movement therapist has a unique approach that takes into account their own personal background, training, and beliefs. As a result, it is difficult to identify any specific universal standard for what DMT hopes to achieve. However, the following description of the intentions of DMT by Elizabeth Rosen helps to provide a picture of the general goal: "the overall psychological objective was to help the patients use dance to express and satisfy individual needs" (as cited in Levy, 1988, p. 117). This quote demonstrates the heavily patient-based approach, which acknowledges that not every participant will need the same things or respond in the same way. As a result, movement is not used in the same way for each participant in DMT. For many, movement is used to access and express that which may not otherwise be accessible to the therapist, for example due to a patient's nonverbal status or due to Freudian concepts of repression which may prevent a patient from accessing traumatic or troubling information themselves.

The origins of dance/movement therapy span several decades and incorporate many different influences. The first dance therapists began practicing in the 1940s (Payne, 2003). Many initially lacked any specific goals or intentions and were simply exploring what seemed to be a natural progression of their teaching or dancing, with several reaching the same or similar ideas without an awareness of what of the others were doing (Levy, 1988). While they had little contact or communication with one another initially, the majority of dance therapists shared the same key influences and had similar backgrounds which allowed them to reach the point of dance therapy independently. These influences—the modern dance movement, Laban technique, and a growing interest in psychology, particularly psychoanalytic

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theory—were highly representative of the social atmosphere of the time. As a result, access to education in each of these areas was fairly widespread. These influences will be discussed in the following sections.

The modern dance movement was arguably the largest influence on the development of dance therapy. Nearly all the early dance therapists either studied under one of the modern dance pioneers or simply saw and were inspired by their performances. The movement began in the early 1900s and was based on the premise of leaving the empty technique of ballet in favor of dance that originated from the individual and expressed emotions to which audiences could relate. Many of the early modern dancers, in their search for a way to break from the constraints of ballet, took inspiration from ancient cultures and folk dances. Isadora Duncan, for example, drew her inspiration for her movements from classical Greek theater. In addition, she and many of the early modern dancers borrowed from the Greeks the idea of using art to help the audience reach a state of emotional catharsis (Levy, 1988). The idea of catharsis was prominent in the work of many modern dancers, who preferred the idea of emotional release to the prescribed emotions of ballet. Ballet's lack of emotional content for dancers as well as for audiences was a major concern for the early modern dancers, who hoped to create work with which audiences could identify by performing works based on universal themes of the human condition (Levy, 1988).

There were two primary dancers within the modern dance movement who served as catalysts for the beginnings of dance/movement therapy by teaching or

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performing for many of the earliest therapists. Ruth St. Denis, who began performing in the United States in the early 1900's drew a large portion of her inspiration from Eastern cultures (Levy, 1988). In particular, St. Denis was attracted to the idea of the spirituality she perceived in Eastern culture, which she felt was largely absent in the United States. According to Levy, the reawakened interest in the idea of spirituality in dance may have been inspired in part by the 1890 publication of Sir James George Frazer's *Golden Bough*, which Levy describes as discussing the role of dance in primitive ritual. The book inspired an "anthropological revolution," which in turn contributed to the rediscovering of elements of ritual dance by modern dancers (Levy, 1988, p. 3). Some, like St. Denis, intentionally adopted elements from other cultures in an attempt to access something that they felt was missing from their own cultures or lives. In the case of St. Denis, this took the form of costumes, characters, and themes based on Eastern dance. Soon after she began performing, St. Denis formed a school along Ted Shawn called the Denishawn school, at which many future modern dancers and dance therapists trained (Levy, 1988).

Mary Wigman was a major face of the modern dance movement in Europe, teaching and performing in Germany where many students traveled to see her work (Levy, 1988). Like St. Denis, Wigman drew inspiration from other cultures. However, where St. Denis drew from Eastern dances and ideas, Wigman utilized elements of ritual in her dances. "Hexentanz," for example, is performed with the dancer wearing a mask and is set to percussive music, both important elements in many rituals. In addition, the choreography is highly repetitive and at times uses the

dancer's body as an instrument, using her hands to stomp her feet on the floor while seated, matching the rhythm of the drums with her stomps (jupsie4, 2014).

Wigman's movement is known for its precise, sharp quality and strength which Levy argues was necessitated by a "need to give form through movement to the events of the time" (1988, p. 3). Her dancing was particularly influential to future dance therapists due to its focus on personal expression rather than technique, as well as the use of improvisation, which has become an important tool in many DMT sessions (Levy, 1988).

Mary Wigman served not only as one of the major leaders of the modern dance movement, particularly in regards to the future development of dance therapy, but also as a link between the early dance therapists and the teachings of Rudolf Laban, who has been credited as another major influence in the work of these first therapists. His influence first appeared in English dance therapists in the 1950's, approximately a decade before dance therapists in America began to make use of his ideas (Levy, 1988). Laban's work is extensive and a full description is far beyond the scope of this research. For the purposes of this work an explanation of Laban's effort qualities is sufficient. Laban's concept of effort qualities provides a means to evaluate and discuss qualities of movement in a standardized fashion, and are based on the belief that movement can reveal information about the person moving, including information about personality or emotional state (Levy, 1988). They take into account weight (strong versus light), spatial intent (direct versus indirect), time (quick versus sustained), and flow (bound versus free) (Konie, 2011). As a result, the effort qualities are an ideal tool for dance/movement therapists, allowing them

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to receive information from their patients without the use of verbalization, of which many patients are incapable. One of the largest contributions of Laban's work was helping to define dance/movement therapy as a cohesive field as prior to this point the language of DMT relied largely on terminology borrowed from other professions and disciplines, making consistency difficult to achieve (Levy, 1988). This is reflected today in the curriculum requirements for dance/movement therapy programs, many of which require training in Laban Movement Analysis.

The third key influence on many of the founders of DMT was a growing societal interest in the field of psychology, particularly in the realm of psychoanalytic theory, pioneered by Sigmund Freud and expanded upon by Carl Jung (Levy, 1988). Freud's theories focused largely on the realm of the unconscious, which he believed was a major motivating force for individuals' actions. Freud's work, along with the work of many other psychologists of the time, focused on utilizing verbalization as a treatment method to help the patient express information repressed in their unconscious (Levy, 1988). In some cases, tests such as the word-association test, in which patients are asked to give the first word that comes to mind when presented with a word or phrase, were used to help draw out information believed to be buried in the patient's unconscious. Freud believed that most instances of psychological disturbance or distress originated in the unconscious or were forced there through defense mechanisms such as repression (Hall & Lindzey, 1957). Dance/movement therapy utilizes these ideas coupled with Jung's concept of active imagination, which uses artistic expression as a means to express the unconscious (Levy, 1988). Many of the early DMT pioneers studied psychoanalytic theory, and a

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survey in Levy's 1988 book demonstrated that for the majority of dance/movement therapists, the perceived importance of psychology in DMT increases with time spent practicing while the importance of dance, a key influence for many beginning therapists, declines.

While there are undeniably numerous additional influences which acted on the early dance/movement therapists, it was these three which were credited as having the largest impact and which were found to have affected the majority of early therapists. However, the influence of early ritual is also visible in the work of many of the first dance/movement therapists and continues to be present to this day. This can be attributed in part to the anthropological revolution inspired by Frazer but also to the presence of elements of ritual in modern dance and in some psychological theories (Levy, 1988). Interestingly, due perhaps to the independent nature of the development of dance/movement therapy, a variety of elements appeared in the work of many different therapists. Although no one therapist incorporated ritual to the point where their classes resembled a ritual dance rather than a dance class, collectively DMT incorporates many of the most critical aspects of ritual and early dance (Levy, 1988).

The work of Marian Chace is a key example of the impact of ideas of ritual dance on the work of the early dance/movement therapists. Chace, widely known as one of the most important figures in the history dance/movement therapy, was one of the first to begin practicing DMT and served as the first president of the American Dance Therapy Association. Her dance training began at the Denishawn school,

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which served as a major influence in her later work (Levy, 1988). She began practicing DMT as a natural progression of the dance classes she taught, focusing on the idea of using dance to express something that could not otherwise be conveyed (Chace, 1993). This interest led to her work with nonverbal patients, and ultimately to her famed work with schizophrenic patients at Saint Elizabeth's Hospital in Washington, D.C., which was one of the first instances of dance/movement therapy being used to treat patients with major neurological or psychological disorders in a hospital setting (Chace, 1993). Chace's classes focused on the satisfaction of a basic human need for communication and the class structure revolved around the formation of a circle which patients could choose to join should they feel comfortable (Levy, 1988). The circle was intended to facilitate communication, as well as a sense of community within the group. Those who chose not to enter the circle were allowed to do so, while those that did had the opportunity to engage in group or collective movement, designed in the moment to target the collective needs of the group (Levy, 1988).

The idea of the circle is one of the most apparent influences of the teachings of the Denishawn school on the work of Marian Chace. According to Levy (1988), Chace had a substantial background in folk dance as the result of her training at the Denishawn school. Key features of this training involved knowledge of the patterns and formations of the dances, including the motif of the circle. As discussed previously, folk dances developed largely out of the restrictions placed on dancing by the Church which had limited or banned the performance of ritual dances. Although unable to maintain choreographic elements of these dances, folk dance

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managed to retain aspects of composition, form, and structure. Included among these elements is the idea of the circle, which was prominent in many early dances including both the medicine dance of the !Kung and the Zar. Thus, the role of the circle as a facilitator of community and of communication in the dance was preserved and passed down from ritual dance, through folk dance, to the modern dance movement, and finally to dance/movement therapy.

Similar processes occurred with different dance/movement therapists and other elements of ritual dances. The use of percussive music, for example, was found in the work of several dance/movement therapists. One individual who made extensive use of percussion within the context of her classes was Franziska Boas. Boas utilized percussive music as a way to help “provoke certain actions and reactions,” as well as to facilitate the feeling and control of specific emotions within the context of the music (Levy, 1988, p. 113). While Boas did not consider herself a dance/movement therapist, she believed in an inherent ability of dance to contribute to the process of healing, and was largely influenced by anthropological ideas as well as by the potential she saw within movement. Similarly, Blanche Evan utilized drums in her DMT sessions, not as accompaniment for dancing but as an element of the therapeutic process in her work with children (Levy, 1988). According to Levy, Boas was largely influenced by the work of Mary Wigman, who also made extensive use of anthropological elements including percussive music (1988).



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Ultimately, although dance/movement therapy was not intended as a resurgence of early ritual and ritual dances, many of the key elements of ritual healing dances can be found in the work of the early dance/movement therapists, including a sense of community, the use of percussive music, the ideology of dance as a means for emotional expression, the presence of a leader who directs the process of the ritual, and the use of specific compositional elements. This was due in large part to the shifting societal attitudes towards self-expression and the rejection of the concept of mind-body dualism (Levy, 1988). These changes led to the rise of psychoanalytic theory and the modern dance movement which, fueled by Frazer's anthropological revolution, adopted elements of ritual dance in an effort to connect with and express a deeper and more aware sense of self. Interestingly, the early years of DMT were highly disorganized, with multiple therapists in the United States and abroad coming to the field on their own and with various influences and ideas of what dance therapy should be. Taking this into account, the question becomes: what factors allowed so many different individuals with different backgrounds to simultaneously reach the same point without any knowledge of the others' work? In other words, how were the first dance/movement therapists able to reach the point of DMT alone, and why did it happen when it did?

In large part, this question can be answered by the points discussed above. The coinciding interest in modern dance and in psychoanalytic theory created a natural breeding ground for the intertwining of ideas involving utilizing principles of modern dance as an additional element in the treatment of psychological disorders, as suggested by Jung's principle of active imagination, which had not yet been

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applied to dance (Levy, 1988). However, this does not explain the presence of each of the principle elements of ritual dance in the work of at least one dance/movement therapist, if not more. It is here that we may refer to the work of Winkelman, who suggested that humans have a biological imperative to take part in shamanic behavior, including the associated rituals. Many of the key elements described by Winkelman as existing in chimpanzees as well as in humans, with the exception of group chorusing or chanting, are found in the work of dance/movement therapists, making the chances of this occurring simply as a coincidence unlikely (Winkelman, 2009).

Although these elements were visible in the modern dance movement, not every aspect of modern dance was translated into DMT. Winkelman's theory suggests that aspects of ritual dance were among those that were passed on from modern dance not due to any conscious choice on the part of the therapists, but instead to the evolutionary tendency to dance as a way to help heal illness, particularly those that are psychological in nature (Winkelman, 2009). Should this be the case, it suggests that dance therapy evolved because as elements of ritual dance began to reappear through the modern dance movement, the natural inclination for the early therapists was to apply them back to the process of healing, for which Winkelman suggests they developed. In addition, this would explain the choice of patients for the early dance therapists, with many electing to work with patients with psychological disorders rather than with physiological medical conditions. This demographic is highly similar to the groups of patients believed by shamanic cultures to be treatable through the use of a healing dance, which held emphasis on

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treating individuals who were facing emotional or psychological distress. (El Guindy & Schmais, 1994). Psychiatric patients, as well as those recently diagnosed with chronic disorders or disability, fill a similar position in today's society. These patients who are faced with the high amount of stigma that accompanies the diagnosis of a mental or psychological disorder are among the few groups in Western culture who may find themselves suddenly occupying a highly different role in society. Dance/movement therapy bears many of the elements of early dances intended to help individuals cope and as such is likely to provide a highly beneficial way for patients to come to terms with their changing place in society.

### **Applications of Dance/Movement Therapy in Parkinson's Disease**

Parkinson's Disease (PD) is a progressive, neurodegenerative disorder impacting the lives of approximately six million people worldwide, including one million in the United States alone (Earhart & Falvo, 2013; Hackney & Earhart, 2010b). As noted by Hoehn and Yahr in their 1967 study of patients with parkinsonism, Parkinson's is a highly diverse disease, with individuals varying in age of onset, type and degree of symptoms, and disease progression. As confirmation of a diagnosis of Parkinson's is possible only upon examination of the brain after death, most diagnoses are made based on symptomology. Included in this diagnosis are the four symptoms prevalent in the majority of cases and which comprise the popular conception of Parkinson's disease. These symptoms are bradykinesia, resting tremor, rigidity, and postural instability (Earhart & Falvo, 2013). The most recognized symptom is bradykinesia, or slowness of movement. In

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addition to bradykinesia, PD patients may suffer hypokinesia, which refers to slowness and stiffness of movement (M. Morris, Huxham, McGinley, Dodd, & Iansek, 2001). Tremor, which generally occurs while the affected individual is at rest and disappears when movement is initiated, is another prominent symptom and was found by Hoehn and Yahr to occur in 90% of cases of parkinsonism. This study also revealed 90% of patients with Parkinson's to be affected by rigidity, which makes passive movement difficult and along with bradykinesia is a hallmark of the disease (Hoehn & Yahr, 1967). Finally, postural instability occurs in a large majority of cases and strongly contributes to the increased incidence of falls found in the Parkinson's population, with up to 70% of individuals diagnosed with PD reporting a fall in a given year (Hackney & Earhart, 2010b).

In addition to these four primary symptoms, there are various motor symptoms that are not uncommon in Parkinson's patients. These include facial masking, in which an individual's facial expressions are substantially limited, as well as a flexed posture. Flexed posture is often found in advanced cases and may include aspects including flexed forearms and hyperextension of the fingers (Earhart & Falvo, 2013; Westbrook & McKibben, 1989). In addition, Hoehn and Yahr note the presence of "simian posture," as well as a "lateral tilt of the trunk" in many of these severe cases of the disease (1967, p. 432). A distinctive gait pattern also develops due to the impairment of various aspects of gait on both a neurological and physiological level. Patients with Parkinson's tend to walk with slow, shuffling steps. The reduced walking speed in these patients has been found to be due to a decrease in the length of each stride, which also gives the distinctive "shuffling" appearance

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(M. Morris et al., 2001). The final component of the shuffling gait is the diminished height of each step, resulting in the feet remaining close to the floor during walking (Baker, Rochester & Nieuwboer, 2007).

Gait speed is also impacted by a change in the proportion of time spent in each component of walking. In healthy individuals, the majority of walking time is spent in "swing," in which the weight is on one leg as the second leg swings forward to prepare for the next step. In Parkinson's patients, the percentage of time spent in "stance," with weight distributed between both feet, significantly increases (M. Morris et al., 2001). Spending a greater amount of time in stance may help to offset balance difficulties, as the two-footed stance position provides a larger base and therefore a greater degree of stability than does the single-leg position of the swing phase. However, moving from a stance position rather than through it may diminish the range of motion an individual can achieve in their next step while maintaining balance. Thus, the change in stance and swing phases may contribute to the diminished stride length found in Parkinson's disease and thus to the overall reduction of gait speed.

A final gait disturbance frequently found in Parkinson's patients is akinesia, or the absence of movement, frequently referred to as "freezing of gait" (Earhart & Falvo, 2013). In this condition, movement stops abruptly, potentially resulting in falling. Freezing of gait can occur during any walking activity but is more likely to occur in those with more advanced cases of Parkinson's or while attempting turns. Turning can be a particularly difficult activity for individuals with PD due not only to

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the increased risk of freezing but also to a tendency to turn “en bloc,” with the body and head moving as a collective unit rather than with the head leading and the rest of the body following sequentially (Earhart & Falvo, 2013). Combined, these two phenomena make turning a relatively high-risk activity for individuals with Parkinson's, particularly those in advanced stages of the disease, and thus one that should be targeted by rehabilitation and physical therapy programs as for most it is a necessary component of day-to-day life.

The symptomology of Parkinson's disease is not limited to the physiological. There are a multitude of psychological symptoms that occur either as a component of the disease itself or as a result of diminishing levels of ability as the disease progresses. Most common among these are anxiety and depression, which are found in Parkinson's patients at a higher rate than in the general population. A 2009 Canadian survey found 9% of respondents with self-reported Parkinson's disease to have major depression, a rate nearly twice as high as the prevalence in the general population (Jones, Pohar & Patten, 2009). It was also found that those respondents with depression tended to have lower quality of life scores, and that depression may serve as a better predictor of scores on quality of life tests than physiological symptoms. Most important, however, was the finding that once depression and life stress were accounted for, the duration of an individual's PD had no bearing on their quality of life scores (Jones et al., 2009). This is a particularly noteworthy finding as in Parkinson's disease there tends to be a strong relationship between disease duration and physical disability, indicating that were depression not a factor there would be little difference in quality of life between individuals who still maintain

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high levels of functional mobility and those who are confined entirely to a bed or wheelchair. This indicates the strong need for treatment options to focus not only on improving physiological symptoms of the disease but also, perhaps more importantly, on improving the psychological health of the person.

Parkinson's disease, once diagnosed, tends to progress along a fairly consistent set of stages. While there are exceptions—some individuals skip entire stages and progress directly to advanced levels of disability, while others stay in the first stage for years on end—most cases follow the same general framework (Hoehn & Yahr, 1967). In 1967, Hoehn and Yahr published a paper presenting an “arbitrary” set of stages into which Parkinson's patients could be classified by physicians. These guidelines, while slightly modified, still exist and are frequently utilized today. They consist of five stages, broken down by disease progression and level of disability, as follows:

*Stage I.* Unilateral involvement only, usually with minimal or no functional impairment.

*Stage II.* Bilateral or midline involvement, without impairment of balance.

*Stage III.* First sign of impaired righting reflex. This is evident by unsteadiness as the patient turns ... Patients are physically capable of leading independent lives, and their disability is mild to moderate.

*Stage IV.* Fully developed, severely disabling disease; the patient is still able to walk and stand unassisted but is markedly incapacitated.

*Stage V.* Confinement to bed or wheelchair unless aided. (p. 433)

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Currently, there are three primary options for treatment of Parkinson's disease: surgical, pharmaceutical, and exercise therapy. As there is no cure for PD, emphasis is placed on slowing the progression of symptoms and reducing the level of functional disability in each individual. However, the number of intervention options are limited, particularly in the realms of surgery and pharmaceuticals, resulting in most patients being treated through similar methods, albeit at different points in their lives. The primary drug used to treat Parkinson's is levodopa, which is used for dopamine replacement and is metabolized into dopamine in the brain. Unfortunately, not all symptoms are responsive to medication and long-term use of levodopa is associated with additional complications, making it less than ideal as a long-term solution (Earhart & Falvo, 2013). Deep brain stimulation, a surgical intervention involving the implantation of electrodes into the brain, can allow for a reduction in levodopa dosages. The electrodes deliver electrical pulses into the brain, targeting specific regions thought to be involved with Parkinson's symptoms (Earhart & Falvo, 2013). However, while deep brain stimulation can be beneficial in terms of preventing additional symptoms from levodopa usage, it requires more research as to the most beneficial areas of the brain to target. Currently, neither levodopa nor deep brain stimulation is able to postpone disease progression, only mask symptoms (Earhart & Falvo, 2013).

In recent years, exercise therapy has been proposed as a new method of treatment for Parkinson's patients. The beneficial effects of exercise on the brain have been well-documented and initial animal models showed promise for application of exercise therapy in PD (Earhart & Falvo, 2013). A 2008 review of



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randomized controlled trials regarding exercise interventions in patients with Parkinson's disease found that benefits were frequently reported in gait speed, balance, muscle strength, and overall physical functioning. While the studies reviewed tended to be of low to medium methodological quality, there is sufficient evidence to suggest that exercise programs are beneficial options for the improvement of physical symptoms in PD (Goodwin, Richards, Taylor, Taylor & Campbell, 2008). Although these programs are relatively simple to implement, exercise classes for people with Parkinson's often suffer from a high attrition rate (Hackney & Earhart, 2009c). A potential solution to this is the use of dance classes, which offer the benefits of exercise interventions with an additional social component that may help contribute to improved quality of life and promote continued attendance. Dance therapy in Parkinson's disease has become the topic of increased research and focus in recent years, though there is little consensus in the academic community regarding the actual benefits.

It is critical that a more promising treatment option be made available to individuals with PD. The disease itself is immensely debilitating, and has been compared to rapid, premature aging (Earhart & Falvo, 2013). The majority of individuals with Parkinson's disease are diagnosed between age 50-99, and have a mortality rate that is nearly three times that of the general population (Hoehn & Yahr, 1967). It should be noted that in 1967, over 100 years after Parkinson's disease was first described, Hoehn and Yahr found that the mortality rate for individuals with PD had remained essentially unchanged during that time despite the introduction of new medications and treatment options as well as an increase in

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the medical community's understanding of the disease. This underscores the need to devote resources to the improvement of quality of life in individuals with Parkinson's, as there has been little to no progress in slowing or stopping the disease entirely.

### **Review of Literature**

The current literature on the efficacy of dance therapy for Parkinson's disease is fairly limited. In part, this is due to the relative recency of interest in the subject area. The first article to explore the idea of dance in Parkinson's patients was published by Westbrook and McKibben in 1989. The study compared a group receiving a six-week dance/movement therapy intervention with a control group, which received six weeks of an exercise group (Westbrook & McKibben, 1989). The study looked at outcome measures including: neurological status, measured using the amount of time required to walk thirty-two feet; handwriting; and a series of tasks used to assess functional disability. In addition, psychological status was measured using the Beck Depression Inventory. The study found that dance was more effective than exercise in improving walking times, and concluded that dance/movement therapy showed promise as a supplemental treatment method for individuals with Parkinson's disease (Westbrook & McKibben, 1989). In the years since, there have been a number of studies published on the topic, with the majority conducted in the last ten years. However, most of the literature has been published by a select few authors who dominate the field, and a large number of studies are still ongoing due to the recent surge in interest. In addition, very few of the studies

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conducted are true randomized controlled trials, meaning that the results from most studies cannot be used to establish more than a correlational relationship, substantially limiting the functional use of the findings. Without randomized controlled trials, it is impossible to show definitively whether participation in a dance class is responsible for any benefits observed.

A large proportion of existing studies also suffer from methodological flaws. The lack of a control group or of double blinding strategies can greatly increase the risk of bias. For example, the absence of participant blinding can lead to the presence of demand characteristics, which are cues that may bias a participant's behavior, whether knowingly or unknowingly (Heiman, 2000). For example, a participant may report increased scores on a quality of life survey at the end of a dance intervention in part because they expect to find an improvement or because they believe that the experimenter would like to see higher scores and they wish to be helpful. While double blinding, in which neither the participant nor the researcher is aware of the participant's group assignment, is the gold standard in research, it is not feasible in the context of a dance intervention as there is no way to prevent the participants from being aware of their group assignments. Therefore, there is a limited amount of bias in each experiment that is inevitable, regardless of study design. However, there are other methodological elements that should be present in a well-designed study that are often missing.

Of the 24 studies regarding dance and Parkinson's disease consulted, excluding qualitative and review studies, 15 were reviewed in one or more of three

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review articles (Hackney & Bennett, 2014; Mandelbaum & Lo, 2014; Shanahan, Morris, Bhriain, Saunders & Clifford, 2015). While two of these three articles noted the methodological quality of the studies reviewed, only one utilized a standardized system for determining quality (Shanahan et al., 2015). Under the presented scales, five studies out of nine reviewed were classified as having good methodological quality, while one was qualified as poor. The most common methodological flaws were the lack of blinding, followed by a lack of allocation concealment, in which the researchers are not aware of the participants' group assignments (Shanahan et al., 2015). Unlike double-blinding, allocation concealment should be feasible in a well-designed study, requiring only that the researchers themselves do not teach the classes. The tendency for studies to suffer from this particular methodological flaw suggests either a lack of qualified instructors to teach dance classes, requiring the researchers to teach themselves, or a lack of interested researchers from outside of the dance discipline. The literature would benefit greatly from a collaboration between experienced teachers and qualified researchers.

Mandelbaum and Lo (2014) also included information regarding methodology in their review of ten studies, but did not use a standardized system to rank or rate quality. Instead, details were provided regarding methodological flaws present in each study. Many of the studies, like those reviewed by Shanahan, suffered from a lack of proper controlling or only assessed patients during one phase of their medication cycle, leaving questions as to how successful dance interventions may be in patients who are off medication. Some of the studies suffered from other design flaws as well. Most notably, the procedure in many of the

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studies is essentially impossible to reproduce due to a lack of detailed description (Mandelbaum & Lo, 2014). This severely limits the credibility of each study and is likely a contributor to limited information in the field, as a large portion of scientific research involves the replication of other people's work in order to confirm findings. The inability to replicate another's experiment therefore means that each experimenter must essentially start from scratch, with no way to know whether another's work can be trusted as a base on which to design further research.

The information provided by experimental and quasi-experimental studies is supplemented by an ever-increasing number of qualitative studies. These are often discounted by scientists, policy-makers, and the medical community as they cannot provide evidence-based facts. However, these qualitative studies can provide insight that statistical tests alone cannot, including information regarding the opinions of participants, teachers, and caregivers. As pointed out by Hoehn and Yahr (1967), Parkinson's disease is a highly debilitating disease with a substantially heightened mortality rate. As there is no cure or treatment option that is particularly successful at stopping the progression of the disease or lessening symptoms, any method that helps to provide an increase in quality of life or that contributes to a lessening of physiological or psychological symptoms is worth pursuing in order to give patients the highest level of physical functioning and comfort possible. In cases like these, qualitative studies may prove more beneficial than experiments. This is due in part to the necessity for experimental studies to show that an outcome is statistically significant in order for it to be deemed relevant. With diseases such as Parkinson's, however, the likelihood of an improvement being large enough to be statistically

significant is fairly low. This means that there are potentially benefits that cannot be detected through the use of experimental studies or meta-analyses but that can be demonstrated through qualitative research.

Despite the potential underreporting of benefits due to the limitations of experimental research, the existing literature is worth consulting as it can provide insight regarding the areas, if any, in which individuals with Parkinson's may expect to see improvement following participation in dance classes. Many, though not all, researchers compensate for the high threshold of statistical significance by also noting the level at which clinical significance is reached. Clinical significance indicates the point at which an improvement, while still not statistically significant, is noticeable to clinicians and/or patients. It can be argued that for interventions concerning Parkinson's patients clinical significance rather than statistical should be the threshold at which an improvement is deemed important since, as previously noted, even a small improvement can have a large impact on patients' lives (Hackney & Earhart, 2009a). However, levels for clinical significance have not been standardized for each outcome measure and thus researchers are not necessarily consistent in what constitutes a clinically significant improvement. In addition, many researchers choose not to mention clinical significance at all, reporting instead either statistical significance or general trends for each outcome measure.

### **Outcomes of Dance Interventions**

Outcomes of dance therapies for Parkinson's patients can generally be categorized into one of three areas—physiological, psychological, and qualitative.

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Physiological outcomes deal with the physical body and its abilities, and can be measured using a number of tasks or tests. In many cases, researchers choose to utilize one of a few widely-accepted tests to measure generally-defined outcomes such as balance. However, not all researchers operationalize their outcomes in the same way, leading to variability between studies and making comparisons difficult. In addition, some researchers utilize tests that have not been assessed for validity and reliability, or that are not widely used. This further complicates the task of comparing results to find overall trends, and requires that any reviews of the literature begin with the creation of a unique operationalization of each potential outcome to encompass the various definitions and tests from each unique study.

There are three primary physiological outcomes assessed in the literature: disease severity or disability, balance, and gait. Disease severity is one of the most commonly assessed measures, measured in nearly all of the studies consulted. It is also unique in that all of the studies reporting disease severity as an outcome measure utilized the same test. This test, the motor section of the Unified Parkinson's Disease Rating Scale (UPDRS), has high internal consistency as well as test-retest reliability and as such is widely accepted within the medical field (Steffen & Seney, 2008). While some studies did utilize the entirety of the UPRDS, the majority focused exclusively on the UPDRS III, which assesses motor function only. This is due in part to the lower internal consistency of other sections of the UPDRS, particularly the Mentation, Behavior, and Mood subscale (Steffen & Seney, 2008). In addition, the motor section has the greatest relevance to the question of physiological improvement after dance interventions, as it is a strong indicator of

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disease progression and of functional ability (Steffen & Seney, 2008). Of the eleven studies utilizing the UPDRS as a measure of disability or disease severity, nine reported a statistically significant improvement, indicating a substantial reduction in disease severity in Parkinson's patients who participated in dance interventions (Duncan & Earhart, 2012; Hackney, Kantorovich, Levin, & Earhart, 2007; Hackney & Earhart, 2009c; Hashimoto, Takabatake, Miyaguchi, Nakanishi, & Naitou, 2015; Heiberger et al., 2011; Marchant, Sylvester, & Earhart, 2010; McKee & Hackney, 2013; Volpe, Signorini, Marchetto, Lynch, & Morris, 2013; Westheimer et al., 2015).

The second physiological outcome measured was balance, which was measured through the use of twelve distinct tests in sixteen of the nineteen studies assessed. Of these twelve tests, only three were used in four or more studies. These three tests—the Timed Up-and-Go, the Fullerton Advanced Balance Scale, and the Berg Balance Scale—are the most common and most well-researched tests for measuring balance. The Timed Up-and-Go (TUG) was the most frequently used, appearing in ten of these sixteen studies. This test involves asking participants, who begin seated in a chair, to rise and walk a distance of three meters at a comfortable pace before turning around, walking back to the chair, and returning to the seated position. The TUG is a useful procedure for assessing mobility, particularly in the elderly (S. Morris, M. Morris, & Iansek, 2001). Of the ten studies that reported scores for the TUG, only two demonstrated a statistically significant improvement (Hashimoto et al., 2015; Volpe et al., 2013). However, five additional studies noticed a “positive trend,” with participants' times decreasing, though not enough to be statistically significant (Batson, Migliarese, Soriano, Burdette, & Laurienti, 2014;



Hackney et al., 2007a; Hackney & Earhart, 2009a; Hackney & Earhart, 2009c; Heiberger et al., 2011).

The Berg Balance Scale is a test designed to measure balance ability over time and in various settings. It is comprised of fourteen tasks, each scored on a scale of 0-4, giving a total score ranging from 0 to 56. Higher scores indicate a higher level of balance ability, with scores above 41 indicating full independence and below 20 indicating a patient who is wheelchair-bound (Qutubuddin et al., 2005). The BBS, while having high reliability and validity, is limited by the occurrence of ceiling effects, which occur when a task is easy enough that patients tend to achieve a high score (Qutubuddin et al., 2005; Schlenstedt et al., 2016). Six studies reporting the Berg Balance Scale as a measure noted statistically significant improvements (Hackney & Earhart, 2009a; Hackney & Earhart, 2009c; Hackney & Earhart, 2010b; Hackney et al., 2007; Hashimoto et al., 2015; Marchant et al., 2010). Two additional studies noted positive trends (Hackney & Earhart, 2010a; Volpe et al., 2013). The third and least common measure for testing balance is the Fullerton Advanced Balance Scale (FAB), which utilizes ten measures to assess balance, including balance requiring dynamic postural control. The FAB, while infrequently used, is a highly reliable measure of balance (Schlenstedt et al., 2016). Of the four studies utilizing the FAB, all four reported a statistically significant improvement in scores (Batson, 2010; Batson et al., 2014; Houston & McGill, 2013; McKee & Hackney, 2013). It appears to be reasonable, given the evidence, to conclude that dance interventions have a positive impact on functional balance.

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Gait is another frequently assessed outcome measure, and possibly the least well-defined. While all of the balance tests measured the same outcome of balance, gait can be assessed through various measures. Gait speed, freezing of gait, and the percentage of time spent in swing versus in stance are all commonly assessed components of gait. Gait speed is the most commonly assessed among these, and can be measured using a variety of different tests. In some studies, participants are simply instructed to walk at a comfortable pace and velocity is measured. In others, participants complete the 6-Minute Walk Test (6MWT), in which participants are instructed to walk back and forth along a set distance as many times as possible for six minutes, taking breaks as necessary (Falvo & Earhart, 2009). The total distance traveled is then measured and recorded. The 6MWT has been found to correlate significantly with the BBS, the UPRDS III, and the TUG. Utilizing these measures of gait velocity, three studies noted statistically significant improvements, with two using gait speed and one using the 6MWT (Hackney & Earhart, 2009a; Hackney & Earhart, 2010b; Westbrook & McKibben, 1989). Five studies also noted positive trends, including two of the four studies that recorded gait speed and three of the six that utilized the 6MWT (Hackney & Earhart, 2009c; Hackney & Earhart, 2010a; Hackney & Earhart, 2010b; Hackney et al., 2007; Hackney et al., 2007b).

Six studies reported on freezing of gait as an additional measure of gait function. Freezing of gait is notoriously hard to reproduce in clinical or laboratory settings, and is thus difficult to test using conventional measures (Maetzler, Domingos, Srulijes, Ferreira, & Bloem, 2013). Instead, participants are asked to fill out the Freezing of Gait Questionnaire (FOG-Q) (McKee & Hackney, 2013). While

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questionnaires suffer from a unique set of design flaws due to their being performed outside of the laboratory setting and without the supervision of a researcher, the FOG-Q is still a useful tool for noting the incidence of freezing episodes. Of the six studies that asked participants to fill out the FOG-Q, only one reported a statistically significant improvement (Volpe et al., 2013). Two additional studies noted a trend toward decreased freezing (Hackney & Earhart, 2009a; Hackney et al., 2007b). This suggests that dance interventions are not particularly beneficial at reducing the incidence of gait freezing, though more research is required. Overall gait performance, however, seemed to improve with eight of ten measures of gait velocity reporting at least a trend towards improvement. A number of studies also reported improvements in the percentages of the gait cycle spent in gait and stance, suggesting a normalization of the gait cycle after dance interventions (Hackney & Earhart, 2009c).

The reasons for these improvements in physiological symptoms remain unclear, in part due to the limited body of existing research. Studies have been conducted regarding the role of the brain in dance which may help to shed light on the topic. Tango, for example, which has been used in a number of interventions for individuals with Parkinson's disease, has been shown to activate the cerebellum, putamen, and superior parietal lobule. Other studies involving the use of neuroimaging techniques have contributed to the identification of major brain regions involved in the act of dancing. Karpati, Giacosa, Foster, Penhune, and Hyde (2015) suggest that the results of some such studies may demonstrate a relationship between long-term dance training and brain plasticity, particularly in areas of the

brain related to motor function. This suggests that participating in dance interventions may contribute to increased motor function in Parkinson's patients by allowing for the formation and strengthening of neural connections in these regions of the brain associated with motor ability.

These arguments are supported in part by the findings of Batson et al. (2014), who conducted a dance intervention for Parkinson's patients in order to assess the impact of dance on balance. The study involved utilizing functional resonance imaging (fMRI) techniques in order to view changes in brain structure in one participant after two sets of interventions. The first met three hours per week for seven weeks, while the second was more intensive and met for five consecutive one-hour classes in a row (Batson et al., 2014). Although neural changes were observed after the first phase of the study, those observed after the intensive intervention were arguably more significant. Changes were observed in the basal ganglia of the participant, with a substantial increase in connections between the basal ganglia and premotor cortex. As the isolation of the basal ganglia has been implicated as a potential cause for some of the symptoms of Parkinson's disease, this is a highly significant finding as it suggests a biological foundation for the improvements observed after participation in dance classes (Baker et al., 2007). However, although this study provides insight as to the physical changes taking place within the brain over the course of a dance intervention, the actual mechanisms by which this process occurs remain unclear (Batson et al., 2014).

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In addition to changes in physiological symptoms, a number of studies have assessed changes in psychological symptoms. In particular, cognitive function, depressive symptoms, and quality of life were commonly assessed. As with the measurement of physiological symptoms, there was a degree of limitation present due to the frequent use of non-standard measures, particularly in the measurement of cognitive function. In addition, relatively few studies assessed these psychological measures, and very rarely did multiple studies utilize the same tests for a given measure. This makes it difficult to compare the results of different studies, as they may test different elements of the same measure. However, the psychological constructs measured are some of the most important elements for determining the success of dance interventions in Parkinson's disease. In part, this is due to the nature of these measures as overarching, broader topics than some of the physiological measures recorded. For instance, quality of life measures taken at the start and completion of a dance intervention can provide researchers with an idea of the overall change in participant well-being, encompassing changes in all dimensions of life. In contrast, physiological measures tend to focus only on one particular aspect of functioning that is impaired in Parkinson's disease but which may or may not contribute largely to participants' quality of life.

Cognitive function is the first domain of psychological health assessed, and ties in closely with physiological symptomology. However, as diminished cognitive function is not typically a major concern in Parkinson's disease it is not imperative that an intervention designed for individuals with PD also provide gains in cognitive function and performance. In fact, many of the studies in which cognitive function

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was measured utilized it as a component of their inclusion criteria rather than as an outcome measure (Batson, 2010; C. Lewis, Annett, Davenport, Hall, & Lovatt, 2014). In these cases, tests measuring cognitive function were administered only before dance interventions took place in order to ascertain that participants were not suffering from diminished cognitive abilities that might impair their ability to take part in the classes or put them at increased risk for injury. Of the four studies that conducted tests of cognitive function, two utilized the Mini-Mental State Exam (MMSE) as a screening tool while only two assessed cognitive function as an outcome measure. Of these two, neither used common tests such as the MMSE. McKee and Hackney (2013) assessed cognitive function with three measures, although only one, the Brooks Spatial Task, saw a statistically significant improvement in scores. The second study, conducted by Hashimoto et al. in Japan, utilized the Mental Rotation Task and found a statistically significant improvement (2015). Ultimately, however, due to the low number of studies utilizing cognitive function as an outcome measure as well as their use of infrequently used tests it appears premature to speculate as to the potential effects of dance classes for patients with Parkinson's given the available evidence.

Depression was also an infrequently-assessed, yet important, measure.

Depression causes a reduction in mental health, which can negatively impact health-related quality of life. As mild to moderate depression is quite prevalent in Parkinson's patients and is difficult to diagnose due to the substantial overlap in symptomology, suggesting that patients begin non-pharmacological treatments for depression at the time of diagnosis appears a viable option (Jones et al., 2009).

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Theoretically, including treatments for depression from the onset of Parkinson's disease may help to reduce the number of patients who become depressed and contribute to an overall increase in mental health and therefore quality of life. Should dance therapy interventions prove to be beneficial in reducing depression in individuals with Parkinson's disease, they would provide an ideal medium through which to present both preventative and treatment options for depression while conferring additional physiological benefits. Unfortunately, depression has been assessed in only three studies involving dance interventions for Parkinson's patients, providing little reliable evidence with which to determine the success of dance classes as either preventative or treatment options for depression.

Of these three studies, only one has found dance interventions to be associated with a significant decrease in depressive symptoms (Hashimoto et al., 2015). The other two, both of which utilized the Beck Depression Inventory to measure depression, reported no change in depressive symptoms at the end of the dance intervention (Westbrook & McKibben, 1989; Westheimer et al., 2015). According to Westbrook and McKibben (1989), this could be due in part to the low incidence of depression reported at the start of the intervention. As most participants were not classified as depressed, there was insufficient room for improvement to allow for any significant changes. Due to the lack of available research as well as the mixed findings, a substantial amount of further research is required in order to establish a relationship between dance interventions and depression in Parkinson's patients.

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As previously noted, quality of life is one of the most important measures to evaluate due to its comprehensive nature. Scales assessing quality of life ultimately provide researchers with insight as to the overall impact of disease on a patient's daily life. Despite the potential implications of such a measure in a field such as dance therapy, which aims to heal the person as much as the disease, it was reported in only nine of the nineteen studies consulted. Six of these utilized the Parkinson's Disease Questionnaire-39, a 39-question test involving disease-specific questions designed for patients with Parkinson's (Marchant et al., 2010). Two of these studies reported no change in quality of life, while three reported improvements (Hackney & Earhart, 2009b; Hackney & Earhart, 2010a; Volpe et al., 2013). Of these, only one was reported as being statistically significant (Hackney & Earhart, 2009b). One additional study noted statistically significant improvements in quality of life using both the Brunel University Mood Scale and the Profile of Mood States (C. Lewis et al., 2014). A final study reported an improvement in quality of life based on several questionnaires, but did not perform statistical analysis on the results (Heiberger et al., 2011) Generally, there appears to be a positive trend, however due to the inconsistency of the reporting of results as well as the lack of a consistent measurement scale it remains difficult to provide an analysis regarding quality of life outcomes.

The role of qualitative evidence in research and medicine remains contested. As discussed previously, many professionals discount the value of qualitative evidence as it does not utilize numerical values as a means for quantifying and standardizing results and therefore cannot be assessed through traditional



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statistical analysis. However, the potential value of knowledge acquired through qualitative research is indisputable. According to Miller and Crabtree (as cited in Houston, 2011), "knowing the efficacy of a drug (or dance class) is not sufficient to understand how individuals will encounter it, perceive themselves in relation to it and construct notions of health and illness around it" (p. 337). This suggests that elements of an individual's own personality and outlook have the capacity to impact the success of any treatment applied. As such, it is important to consider elements beyond the pure quantitative evidence as it may not be truly reflective of the total effect on the person. The early dance/movement therapists appeared to be aware of this and focused on what appeared to be successful for individual patients or on what such patients responded well to rather than looking for hard evidence supporting the success of their techniques. However, as the field of DMT has grown and expanded to other populations, the medical community has begun to search for explanations of why and to what extent such interventions are successful. In so doing, they have assigned medical and scientific jargon to a field that was never intended to be defined in those terms and have thus limited the ability to appreciate its full contextual value (Houston, 2011).

Due largely to this long-held belief that the success of interventions must be measured using experimental research designs and quantitative data, most researchers have focused primarily on the quantitative, although some have incorporated elements of qualitative research. This is most frequently done through the use of surveys and interviews measuring participant opinions and perceptions of the classes, as well as the perceptions of caregivers regarding the outcomes of the

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class. However, in most cases these elements of research were presented almost as an afterthought, reported only after all of the physiological data had been reported.

This undermines the importance of the data by presenting it as secondary to the empirical evidence despite its potential impact on the development of the field.

Though relatively limited and often overlooked, this data is worth examining, as it presents important insight as to the benefits beyond improvement of symptoms. As Parkinson's is progressive and the amelioration of symptoms is limited regardless of treatment method, all methods for relieving the associated depression and stress are worth pursuing, particularly if they convey additional physiological and psychological benefits. Dance/movement therapy may present one such option.

Most studies reporting qualitative evidence reported their results using frequently-mentioned keywords from interviews or surveys. The results can be generally divided into three major categories: physical health, mental health/emotional state, and socialization. Some studies have reported general benefits in all three of these areas (Westheimer et al., 2015), while others have gone into more detail regarding the specific improvements reported by participants. For example, out of four studies consulted reporting qualitative benefits, all four noted improvements in socialization. For three of these four, these results were drawn from participant comments noting that the classes gave them an opportunity to socialize and interact with others who are experiencing the same life changes they are, and that they were able to form a sense of community with the other participants in the classes (Ashburn et al., 2015; Houston & McGill, 2013; Westheimer, 2008). The fourth utilized subsections of a quality of life scale in order

to demonstrate changes experienced by participants and reported that the socialization subscale was among the two in which the most progress was noted (Westheimer, 2008). Nearly every study consulted recognized socialization either as an important component of the dance/movement therapy intervention for Parkinson's patients or as a potential mechanism for some of the improvements observed.

Participants tended to give more detail as well as more varied answers regarding their physical improvements. In Westheimer's 2008 study, health was the second most improved subsection on quality of life measures. Additionally, participants were asked to describe how their bodies felt at the end of a class session. Among the most frequently reported were feelings of lightness and of an increase in flexibility. Additionally, some participants reported feeling "better" (Westheimer, 2008, p. 136). Westheimer suggests that the dance classes may increase the participants' sense of well-being, which may in turn contribute to an increased or elevated mood. Interestingly, Houston and McGill noted changes similar to those reported by Westheimer's patients. However, unlike the self-report method utilized by Westheimer, Houston and McGill relied on their own observations of participants, acquired by filming the dance classes and later watching them to observe the changes in participants over time (2013). Among these changes were a decrease in participant rigidity, which likely relates to the increased flexibility noted by Westheimer's patients, as well as increases in well-being and ability to make use of different movement dynamics, defined through the use of Laban's movement analysis techniques.

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Many of the physical changes reported relate strongly to the emotional and psychological benefits reported by participants. In particular, the two are connected by the idea of well-being. This concept is not explicitly defined and may refer to physical well-being, mental/emotional well-being, or both. The latter appears most likely due to the focus of dance/movement therapy on the individual as an interconnected whole rather than as comprised of separate systems. Thus, well-being should fall into both categories of improvement and as a result serves as a strong indicator of overall impact. Additionally, many participants noted a sense of enjoyment and pleasure during or after attending dance classes (Ashburn et al., 2015; Westheimer, 2008). This trend suggests that dance classes may be able to sustain higher rates of attendance over long periods of time than can exercise classes, which have been noted to have high attrition rates (Hackney & Earhart, 2009c). Attendance serves as a critical factor in these cases as long-term participation has been shown to achieve greater improvements than short-term (Duncan et al., 2012). Finally, many participants have reported a sense of achievement and empowerment at the culmination of their classes (Ashburn et al., 2015; Westheimer, 2008). This too is a highly important finding, as many diagnosed with Parkinson's disease are likely to experience a loss of their sense of control over their lives, especially as they begin to lose physical control over their body. Participation in dance interventions may help to mitigate this effect of the disease and to allow participants to feel that they are able to regain a degree of control over their bodies and, by extension, their lives.

### **Survey**

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Notably absent from many qualitative descriptions are the personal opinions of the instructors regarding the benefits and potential of their classes. It is highly possible that this is in part due to the stigma of qualitative evidence. As in most cases the instructor also serves as the researcher, it seems likely that the researcher may exclude his/her own beliefs out of concern that the research may then be discredited due to potential bias. However, as the teachers are among the only individuals observing the classroom process and getting to know the participants on an individual level, their opinions are equally valuable. Additionally, the fact that many dance/movement therapy instructors have been practicing for extended periods of time allows them to witness the growth and change of individuals on a basis far exceeding the scope of much of the research that has been conducted to date. Based on this information, I conducted a survey of instructors currently teaching Dance for PD® classes, a version of dance/movement therapy classes designed specifically for Parkinson's disease patients by the Mark Morris Dance Group and the Brooklyn Parkinson Group (Dance for PD, n.d.). The survey assessed the opinions of instructors regarding the impact of the dance classes on their students.

**Methods.** This study was approved by the Institutional Review Board at Butler University. Participants were recruited using the "Find a Class" page of the Dance for PD® website. The survey was conducted electronically, with the survey presented through SurveyMonkey, a survey creation website. Only instructors whose email addresses were provided were contacted. In total, forty-eight were sent emails providing information about the researcher and a link to the survey (Appendix I).

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The survey was comprised of four sections. The first was designed to collect basic demographic information about the instructor including the number of years they have spent teaching Dance for PD® classes as well as training received before beginning to teach. The second section collects basic information regarding the classes including duration, frequency, and class structure. Section three focuses on the experiences of participants, including social interactions outside of class times as well as the instructors' perceptions of students' enjoyment of the class. Finally, section four asks about student improvement as perceived by instructors. This includes several specific outcome measures as well as the opportunity for instructors to share any additional comments or insights (Appendix III).

**Results.** Twenty Dance for PD® instructors responded to the survey. Of these, half had been teaching classes for five to ten years. No respondents had been teaching for less than one year or more than ten years at the time of the survey. The backgrounds of instructors varied. The majority (80%) reported having taken part in a workshop or training course specifically designed for Dance for PD® instructors, while 40 percent noted having had formal dance training before getting involved with Dance for PD®. Only one participant did not fall into at least one of these categories. Most of the classes were reported as meeting weekly, with only a few classes meeting monthly. One participant noted that classes may meet weekly or monthly depending on interest levels. Class duration was typically one hour, with 45 percent of participants reporting slightly longer classes. No classes were reported as lasting longer than ninety minutes.

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Class structures varied greatly depending on the individual style of the instructor. Many followed a general pattern of moving from seated exercises to stationary standing exercises with the support of a barre or chair, to across the floor work. A number of instructors also stressed the importance of returning to a circle at the end of class for a closing activity or cool-down period. The majority of respondents did not specify a particular dance technique or style on which they base their classes. The Dance for PD® website notes that their classes utilize “movement from modern, ballet, tap, folk and social dancing, and choreographic repertory.” Based on the responses, it appears that different instructors utilize each technique to a different degree based on his/her own background and training. For example, three instructors noted the additional use of basic tap steps and combinations, while six mentioned using improvisation, with some utilizing it as a key feature of the class.

Nineteen of the twenty respondents reported participants meeting and socializing with each other outside of class. In most cases, this entails participants spending time together for a few minutes before and after classes. However, a number of instructors reported that their students belong to the same support groups and as such consistently interact with each other outside of the classroom. This likely facilitates the formation of a sense of community between the dancers, which may help contribute to additional emotional and psychological benefits. Interestingly, four respondents reported that they believed their students found the classes to be “extremely unenjoyable,” while sixteen reported that their students found them “extremely enjoyable.” It seems plausible that this may have been due in part to a

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misreading of the response options, as nineteen of the twenty instructors responded that they “strongly agree” that their students “seem excited to begin each class.” This seems to contradict the answers to the previous item, as it is unlikely that the students are excited to begin each class but find them to be extremely unenjoyable once they have begun. Additionally, one respondent who reported that their students found the class “extremely unenjoyable” wrote in their comments that they found the classes to bring joy to everyone involved. This too supports the idea that the discrepancy was caused by a misreading of the response options. Regardless, these results should be interpreted with caution.

Instructors were asked to rate participants' improvement in the following three areas: balance, range of motion, and walking ability. Forty percent of instructors “strongly agreed” that they had seen improvements in participants' balance since starting Dance for PD®, while thirty-five percent “somewhat agreed” and twenty-five percent neither agreed nor disagreed. Overall, fifteen of the twenty respondents (75%) reported noticing some positive change in participants' balance (Appendix II, Fig. 1). More instructors (85%) reported noticing improvement in walking ability, although fewer (30%) “strongly agreed” that walking ability had improved (Appendix II, Fig. 2). Three instructors reported noticing no change in walking ability (15%). Range of motion, however, had the highest rate of perceived improvement by instructors (Appendix II, Fig. 3). All respondents agreed to some extent that they had seen improvement in the range of motion of participants over time, with forty-five percent reporting that they “strongly agreed.” Overall,



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instructors reported range of motion as being the area with the most improvement, while walking ability and balance were perceived as having some improvement.

**Discussion.** Instructors were asked at the end of the survey to report any additional changes and improvements in students' physical capacities. Many reported that their students seemed to feel more confident and comfortable with movement and expression. This appeared to be one of the most significant changes observed by the instructors, as physical improvement may not be consistent due to the progression of the disease. As one instructor noted, "with PD, progress is small and slow, and sometimes, progress is not [getting] worse." This strongly connects with the suggestions made by multiple researchers that dance interventions for individuals with Parkinson's disease may be worthwhile due not to their capacity to elicit physical improvement or amelioration of symptomology, but due to the positive impact they may have on these individuals' lives. The instructors surveyed appeared to believe strongly that the classes have a positive impact for participants, with two specifically noting that the classes bring joy to their dancers. For a population with such an elevated risk for depression, this alone is an important contribution that has the capacity to potentially have a large impact on quality of life.

This study was limited in part by the small sample size, with only twenty instructors responding to the survey. Additionally, the poor wording of one or more of the items may have contributed to confusion and altered the results. Another limitation was the focus on general participants rather than individuals. It is possible that specific individuals who have or have not made progress in a

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particular area may come to mind initially and influence the instructors' responses to items asking about the class as a unit. Ultimately, the results lack statistical power but are able to contribute to an understanding of the importance of Dance for PD® classes from the perspective of the instructor. All appeared to think positively of the experience and presented particular benefits that they have observed long periods of time that may not have been recognized by researchers as of now.

### **Conclusions**

Historically, dance has been used as a means for healing since its origins in some of the earliest cultures and civilizations. In particular, it has been used as a way to help individuals come to terms with changing roles in society. With the advent of dance/movement therapy in the 1940's, this role of dance has been rediscovered and is now being applied as a supplement to conventional medical treatment. While the evidence remains relatively limited, it appears that dance may provide benefits in multiple aspects of life for patients with Parkinson's disease. Physiologically, for example, improvements in balance are well-supported by the available evidence. However, many of the potential effects of dance interventions for Parkinson's patients lack the methodological quality or statistical significance necessary to be regarded as reliable by the medical community. This is likely a current obstacle for DMT programs designed for Parkinson's patients, as funding and organization for widespread implementation are highly reliant on an ability to display statistically significant improvements brought about by the intervention.

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Despite the low level of evidence available, it appears that dance classes designed for patients with Parkinson's disease are a worthy investment. In addition to the physiological benefits presented above, patients report improvements in their emotional health as a result of the classes and largely report that it is something that they enjoy doing on a regular basis. In nearly all studies, when asked if they would continue to participate the majority responded that they would (Ashburn et al., 2015; Westheimer et al., 2015). These emotional benefits are as critical as the physiological. In fact, Houston and McGill (2013) suggest that "participants were moving in ways in which they were probably already capable of doing, but did not have the courage, or the circumstances, to try" (p.116). This reflects the importance of the mental and emotional benefits, particularly confidence and the sense of agency to which dance contributes. Additionally, it suggests that although dance interventions may not return participants to their pre-diagnosis physical capacity, it may allow them to access their full potential given the limitations of the disease itself. Hypothetically, applying this outside of the dance studio could allow participants to temporarily retain more of their functional capacity as the disease progresses, rather than allowing themselves to fall into a cycle of disability and disuse.

When taking into account the historical role of dance, these results regarding the emotional benefits of dance interventions are hardly surprising. A diagnosis of Parkinson's disease represents a major change in one's future outlook. The disease largely limits mobility, often causing patients to be unable to continue working and to have difficulty continuing to participate in social events or activities. In addition,

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the knowledge of one's impending death must be addressed in a healthy and productive way. This is often overlooked by the medical community, which focuses on ameliorating symptoms and attempting to prolong the lifespan through the use of surgical and pharmaceutical procedures. As a result of these changes in lifestyle and future outlook, Parkinson's patients experience depression at a much higher rate than does the general population (Jones et al., 2009). Dance/movement therapy is uniquely suited to address these issues as it contains many of the elements of early healing dances, which were used to heal the emotional and psychological distress that stemmed from similar life changes.

The literature is undeniably limited, and at present is unable to lead to conclusive answers regarding the benefits of dance interventions for Parkinson's patients or the causality of such benefits. However, given the available evidence regarding physiological benefits as well as the feedback gathered from instructors as well as participants, it does not appear premature to begin to establish these programs on a larger scale while awaiting the results of future research. While Dance for PD® is a positive step in this direction, with multiple programs in each state and in countries around the world, access is fairly restricted to people living near a major urban center or who have the means to travel to such a center. As many of the risk factors for Parkinson's disease are associated with living in rural areas, expanding the programs to include or become accessible to more of these areas seems prudent (Earhart & Falvo, 2013). The responsibility for this expansion need not necessarily be placed on programs such as Dance for PD®, particularly as other styles of dance have been shown to be equally or more effective. Tango, in

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particular, has been shown to have substantial benefits for Parkinson's patients and is a potential avenue for future implementation. A major benefit of the classes is that they require no special equipment and as such can be conducted in any available dance studio or recreation center. The only limitation is that the venue should be handicap-accessible, in order to accommodate participants in later stages of the disease. Despite this, the classes are relatively low-cost. Batson (2010) reported having spent a total of \$720 for a duration of three weeks, with three classes each week, including costs for location, teachers, transportation, administration of tests, and refreshments. This makes dance interventions for Parkinson's patients a cost-effective action despite the lack of concrete evidence supporting them.

However, the necessity of future study cannot be overlooked. Although the physiological benefits have been relatively well-established, more research is necessary in order to clarify potential impacts on quality of life and psychological factors such as depression. This would be best accomplished with a longitudinal study involving newly-diagnosed Parkinson's patients recruited into dance classes such as Dance for PD®. Participants would be assessed upon diagnosis as well as yearly for as long as they are able to participate on measures of depression, quality of life, and motor abilities including those assessed in prior studies. This would allow for continued research and elaboration on the benefits of dance interventions in Parkinson's disease while allowing current PD patients to benefit from the sense of community and the increased self-confidence associated with them. Rates of depression could also be compared with the standard in order to determine if dance has a protective effect against depression. Additionally, following a particular cohort

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of Parkinson's patients from diagnosis until they are unable to continue

participating can provide researchers with information regarding the average duration over which a typical patient might be expected to continue attending classes as well as their reasons for stopping when they are no longer able or no longer wish to continue. Ultimately, this information could help doctors form treatment plans for their patients upon diagnosis to address all symptomology rather than just physiological elements of the disease.

## Appendix I

*Instructor Survey***Perceptions of Instructors Regarding the Efficacy of Dance for PD Classes****Study Information**

**Please read the following:**

**Study Information**

Should you choose to participate in this study, you will be asked to complete an anonymous online survey containing questions about your experiences with and perceptions about Dance for PD classes as a teacher. The results will be used as part of a thesis paper and presentation about the use of dance/movement therapy in individuals with Parkinson's disease. The survey will take approximately 10 minutes to complete, and approximately 65 instructors of Dance for PD classes will be asked to complete the survey. Please answer the questions as honestly and accurately as possible.

**Participation**

Your participation in this study is entirely voluntary. You are free to decide not to participate in this study or to withdraw at any time without adversely affecting your relationship with any faculty at Butler University. Your decision will not result in any loss of benefits to which you are otherwise entitled. If you choose to participate, you may withdraw at any time by closing your browser window, and your responses will not be saved. If you choose to participate, all information will be held in strict confidence and will have no bearing on your academic standing or services you receive from the University. The information obtained in the study may be reported in a senior thesis paper and presented at a research conference but your identity will be kept strictly confidential.

This research is intended for individuals 18 years of age or older. If you are under age 18, do not complete this survey.

**Confidentiality**

Participation in this study is anonymous. You will not be asked for your name, age, or other identifying information. In addition, in order to protect the confidentiality of your students you will not be asked to provide information regarding any specific individuals in your class.

**Benefits and Risks**

There are no direct benefits for participating in this study. However, any information obtained will be used to add to the available body of evidence regarding the use of dance therapy in individuals with Parkinson's disease. There is minimal risk associated with this survey. If you become uncomfortable answering any questions you may skip the question or withdraw from the study without penalty.

**Contact**

If you have any questions about this study you may contact the student researcher, Emilia Floody, at [efloody@butler.edu](mailto:efloody@butler.edu) or at (708)256-1399, or the head researcher, Professor Susan McGuire at the Department of Dance (Lilly Hall, room 046A), at (317)940-9661, or at [smcguir1@butler.edu](mailto:smcguir1@butler.edu).

By clicking "Next," you indicate that you have read and agree to these terms and understand any and all potential risks and benefits.

**Perceptions of Instructors Regarding the Efficacy of Dance for PD Classes****Class/Instructor Information**

1. Are you currently an instructor in a Dance for PD program?

Yes

No

2. For how many years have you been teaching Dance for PD classes?

3. Please describe any specific training received before teaching Dance for PD classes.

4. How often does the class meet?

5. What is the duration of a typical class?

6. Please outline the structure of a typical class.



**Perceptions of Instructors Regarding the Efficacy of Dance for PD Classes****Student Experience**

7. Is there a time outside of class during which participants socialize with each other? (e.g., before or after class)

- Yes
- No

8. If yes, please describe briefly.

9. As an instructor, how enjoyable do you think your students find the class? Please rate on a scale of 1-5 with 1 being "extremely unenjoyable" and 5 being "extremely enjoyable."

- 1- Extremely unenjoyable
- 2- Somewhat unenjoyable
- 3- Neither enjoyable nor unenjoyable
- 4- Somewhat enjoyable
- 5- Extremely enjoyable

10. My students seem excited to begin each class.

- 1- Strongly disagree
- 2- Somewhat disagree
- 3- Neither agree nor disagree
- 4- Somewhat agree
- 5- Strongly agree

**Perceptions of Instructors Regarding the Efficacy of Dance for PD Classes****Student Improvement**

11. I have noticed improvements in participants' balance since starting Dance for PD.

- 1- Strongly disagree
- 2- Somewhat disagree
- 3- Neither agree nor disagree
- 4- Somewhat agree
- 5- Strongly agree

12. I have noticed improvements in participants' range of motion since starting Dance for PD.

- 1- Strongly disagree
- 2- Somewhat disagree
- 3- Neither agree nor disagree
- 4- Somewhat agree
- 5- Strongly agree

13. I have noticed improvements in participants' walking ability since starting Dance for PD.

- 1- Strongly disagree
- 2- Somewhat disagree
- 3- Neither agree nor disagree
- 4- Somewhat agree
- 5- Strongly agree

14. Please note any additional areas in which you have noticed general improvement in students' physical capacities. Please do not include information regarding any specific students.

**Perceptions of Instructors Regarding the Efficacy of Dance for PD Classes**

Thank you

**Thank you for participating in this survey. Your feedback is appreciated.**

## Appendix II

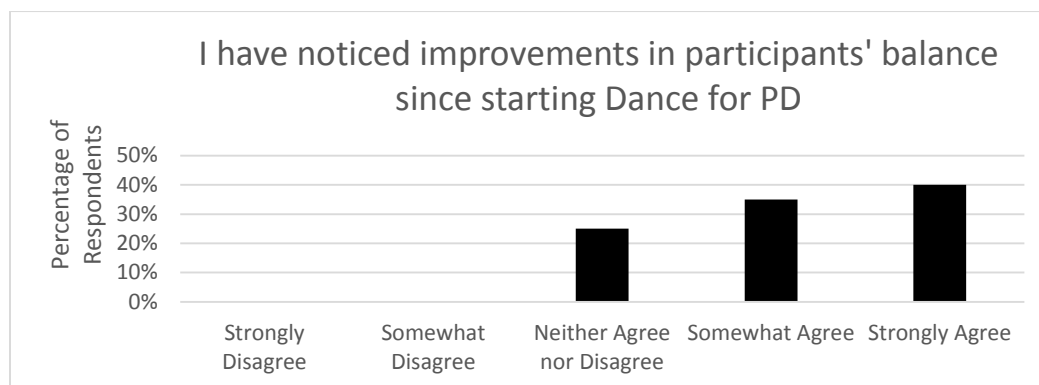
*Survey Results*

Figure 1. Instructor perceptions of participant improvements in balance.

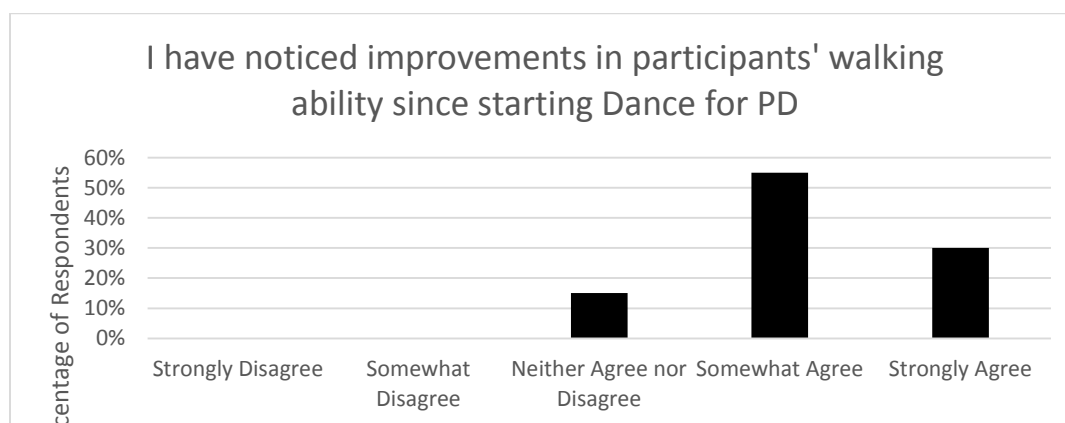


Figure 2. Instructor perceptions of participant improvement in walking ability.

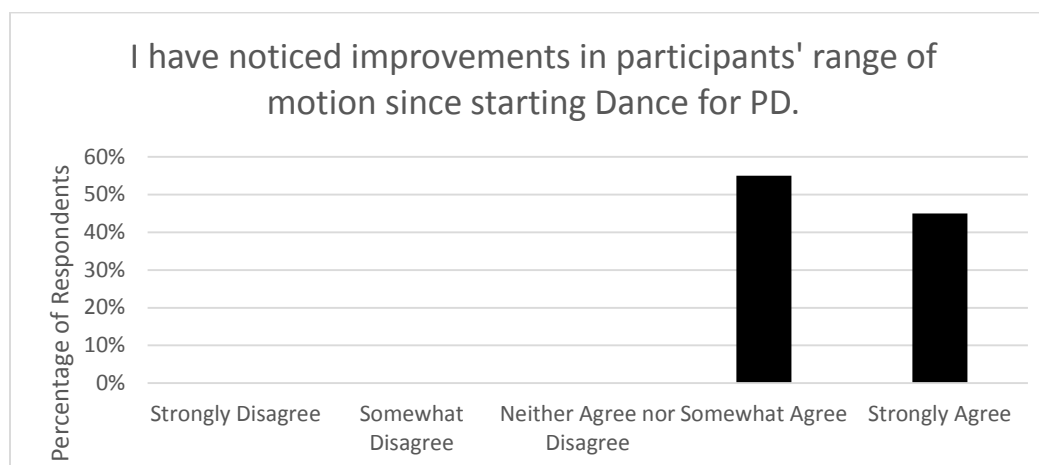


Figure 3. Instructor perceptions of participant improvement in range of motion.

## Appendix III

*Contact Email*

To Whom it May Concern,

My name is Emilia Floody, and I am a senior Dance Performance major and Psychology minor at Butler University. As part of my honors thesis, I am conducting research on the opinions of instructors regarding the impact of Dance for PD classes and would greatly appreciate it if you would take the time to fill out a short survey. The survey should take approximately 10 minutes to complete, and your answers will be kept anonymous through the use of an online form. As individuals with Parkinson's disease are members of a vulnerable population, the survey asks no questions regarding any specific individuals. The focus is instead on your personal observations of the class during your time as an instructor. If you have any questions please feel free to contact me at (708) 256-1399 or at [efloody@butler.edu](mailto:efloody@butler.edu).

Please follow the attached link to complete the survey:

<https://www.surveymonkey.com/r/9FN8YPV> .

I thank you in advance for your time and input.

Emilia Floody  
Butler University Class of '17  
BFA- Dance Performance  
Psychology Minor

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