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Perceptions of the Impact of Non-Contact Boxing on Social and Community Engagement for Individuals With Parkinson's Disease

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Perceptions of the impact of non-contact boxing on social and community engagement for individuals with Parkinson's Disease

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Casey E. Humphrey
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EASTERN KENTUCKY UNIVERSITY
COLLEGE OF HEALTH SCIENCES
DEPARTMENT OF OCCUPATIONAL SCIENCE AND OCCUPATIONAL THERAPY

Certification

We hereby certify that this Capstone project, submitted by Casey E. Humphrey, conforms to acceptable standards and is fully adequate in scope and quality to fulfill the project requirement for the Doctor of Occupational Therapy degree.

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This project, written by Casey E. Humphrey under direction of Dr. Melba Custer Faculty Mentor, and approved by members of the project committee, has been presented and accepted in partial fulfillment of requirements for the degree of

DOCTOR OF OCCUPATIONAL THERAPY

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Executive Summary

Background: Parkinson's disease is a progressive neurological condition that is characterized by a variety of physical and cognitive symptoms. Research supports the use of non-contact boxing for symptom management of Parkinson's disease, but no research is available that examines the social and community impact of non-contact boxing on individuals with Parkinson's disease.

Purpose: The purpose of this study was to explore the perceptions of individuals with Parkinson's disease on their experiences within a community based, non-contact boxing program. Specifically, this study considered how these individuals perceived non-contact boxing to influence their social and community engagement and factors influencing ongoing participation in this program.

Theoretical Framework: This study used the Model of Human Occupation as the guiding framework.

Methods. This was a phenomenological study that utilized qualitative method for data collection including semi-structured interviews and observation. Colaizzi's method was used for data analysis.

Results. The exhaustive description of the phenomenon was: "I fought to get in here" because occupations are important. Three themes were identified which included (1) "Parkinson's Disease is not pretty. You know what the destination is, but we also got a journey to get there, (2) "I don't have to be Muhammed Ali. It's not about that", and (3) "The people I've met here and spending time with will be friends forever."

Conclusions: Individuals with Parkinson's disease involved in non-contact boxing believed that both old and new occupations were important for a variety of reasons. Non-contact boxing was an occupation that individuals with Parkinson's disease perceived as valuable and beneficial.

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CERTIFICATION OF AUTHORSHIP

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Certification of Authorship: I hereby certify that I am the author of this document and that any assistance I received in its preparation is fully acknowledged and disclosed in the document. I have also cited all sources from which I obtained data, ideas, or words that are copied directly or paraphrased in the document. Sources are properly credited according to accepted standards for professional publications. I also certify that this paper was prepared by me for this purpose.

Student's Signature: Casey Humphrey

Date of Submission: 11/29/17

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SECTION ONE: NATURE OF PROJECT AND PROBLEM IDENTIFICATION

Introduction

Parkinson's disease (PD) is a major public health concern due to its significant impact on the lives of individuals suffering from this chronic disease. According to the Parkinson's Disease Foundation (2016), more than one million Americans are living with PD, with up to 60,000 additional Americans being diagnosed annually. Parkinson's disease is "a progressive neurodegenerative disorder manifested by a broad spectrum of motor and non-motor features" (Jankovic, 2008, p.374). Common motor impairments associated with PD include tremors, postural instability, and rigidity; all of which interfere with an individual's ability to effectively engage in activities of daily living (Jankovic, 2008). In addition, non-motor symptoms related to PD include cognitive, social, and emotional deficits (Opara, Brola, Leonardi, & Blaszczyk, 2012). Each of these areas have been identified as decreasing the quality of life of individuals with PD (Opara et al., 2012).

The concept of quality of life is comprised of three primary components: physical, cognitive, and social (Opara et al., 2012). Therefore, the management of motor and non-motor PD symptomology will directly influence an individual's quality of life. It is well known that many physical benefits are the result of consistent participation in exercise. Specifically, there is a large base of literature that supports the benefits of exercise for individuals with PD. Evidence supports that participation in various forms of exercise leads to an overall improvement in motor function within individuals with PD (Dibble, Addison, & Papa, 2009; Reuter, Engelhardt, Stecker, & Baas, 1999; Schenkman, Hall, Kumar, & Kohrt, 2008). Participation in an exercise regimen has also been shown to

positively impact the cognitive deficits associated with PD (Cruise, Bucks, Loftus, Newton, Pegoraro, & Thomas, 2011). In addition to short-term benefits, evidence suggests that exercise is a feasible way for individuals with PD to manage their physical symptoms that interfere with functional activities (Reuter et al., 1999; Schenkman et al., 2008; States, Spierer, & Salem, 2011).

The ability or inability of an individual with PD to engage in social and community activities, based on the successful management of their disease symptomology, plays a pivotal role in their quality of life (Dauwerse, Hendrikx, Schipper, Struiksma, & Abma, 2014). According to the American Occupational Therapy Association (AOTA), social engagement includes participating in expected behaviors individually and through interactions with others which can take place at the community level (AOTA, 2014). Physical and cognitive symptoms associated with PD impacts an individual's ability to be involved with these types of activities which negatively impacts their overall quality of life (Dauwere et al., 2014; Engstrom & Nordeson, 1995). The improvement in occupational function associated with management of symptomology may allow individuals with PD to more positively perceive their social and community engagement.

Boxing has been identified as a form of physical exercise that is beneficial for some individuals with PD. A study by Combs, Diehl, Staples, Conn, Davis, Lewis, and Schaneman (2011) evaluated the benefits of the Rock Steady Boxing program on individuals with PD. The authors found that utilizing the occupation of boxing as an intervention led to improvement in functional mobility and activities of daily living (Combs et al., 2011). Combs and colleagues (2011) also utilized the Parkinson Disease

Quality of Life Scale (PDQL) as an outcome measurement to examine perceived quality of life of individuals with PD. Social functioning is included within the 37 rated items that measure overall quality of life. Overall perceived quality of life was shown to have improved for individuals with PD after participating in non-contact boxing training (Combs et al., 2011).

In addition to the benefits of boxing on the physical, cognitive, and social constructs of quality of life, non-contact boxing is an occupation that is considered purposeful and motivating for many individuals with PD. According to AOTA, "occupations occur in context and are influenced by the interplay among client factors, performance skills, and performance patterns. Occupations occur over time; have purpose, meaning, and perceived utility to the client" (2014, p. S6). Utilizing an occupation-based practice paradigm, purposeful activities that are tailored to the needs of each individual should be used as a motivating occupational therapy intervention (Trombly, 1995). Evidence has shown that individuals who enjoy boxing will be motivated to continue to regularly participate in the occupation and, in turn, continue to receive the associated physical, cognitive, and social benefits (Combs et al., 2011). This demonstrates that it is feasible to consider the use of boxing as a motivating and beneficial intervention for individuals with PD to improve social engagement and participation.

Problem Statement

Research has shown that the common symptoms associated with PD have a negative impact on the quality of life of the individual suffering from the disease (Opara et al., 2012). Research also supports the use of utilizing non-contact boxing as a method

for managing the symptoms of PD (Combs et al., 2011; Combs, Diehl, Chrzastowski, Didrick, McCoin, Mox…Wayman, 2013). The management of PD symptoms through participation in non-contact boxing has been shown to improve the perceived quality of life for these individuals (Combs et al., 2011). Individuals with PD perceive social and community activities to be a major contributing factor to their quality of life (Dauwerse et al., 2014). However, there is no research that considers how individuals with PD perceive non-contact boxing to impact their social and community engagement and whether these perceptions influence their continued participation in the boxing program. The limited available research has examined quality of life measures on a general basis without focusing on the specific factors that contribute to an individual's quality of life. Focusing on a specific component of quality of life such as social and community engagement will provide unique knowledge to better understand an individual's subjective experience when participating in the occupation of boxing. Increasing the understanding of how individuals with PD perceive their boxing experience is imperative to successful use of this occupation as tool for long-term symptom management and improved quality of life.

Purpose

The purpose of this qualitative study was to explore the perceptions of individuals with PD on their experiences within a community based, non-contact boxing program in Lexington, Kentucky. Specifically, this study considered how these individuals perceived non-contact boxing to influence their social and community engagement and factors influencing ongoing participation in this program.

Social engagement will be defined as participation in occupations in social situations involving peers, family, and communities and promote an interdependent social interactions (AOTA, 2014, p. S21). Community engagement is a sub-component of social engagement and will be defined as "activities that result in successful interaction at the community level (i.e., neighborhood, organizations, work, school)" (AOTA, 2014, p. S21).

Research Objectives

As previously stated, individuals with PD experience a variety of motor and non-motor symptoms that contribute to occupational dysfunction and a potential decrease in quality of life. These deficits may interfere with all aspects of their lives including their ability to participate in social and community activities. This study aimed to understand how individuals with PD who were participating in a non-contact boxing program perceived their experience and its relationship to their social and community functioning. Specifically, this study attempted to address the following research questions:

1) How do individuals with PD perceive non-contact boxing to impact their social and community engagement?

2) Do individuals with PD perceive the impact of non-contact boxing, as it relates to social and community engagement, to influence their decision to continue to participate in this type of program?

Theoretical Framework

The Model of Human Occupation (MOHO) was the primary theory that guided the development of this study. "The Model of Human Occupation takes a system's perspective of the person, emphasizing the constant transaction of person, task, and

environment" (Bruce & Borg, 2002, p.210). MOHO identifies three characteristics that guide the human and occupation relationship: volition, habituation, and performance capacity (Kielhofner, 2008). These human components work in a circular relationship with the task and environment to constantly influence one another (Kielhofner, 2008). The concept of this influential relationship was the driving paradigm for the development of this study. This study specifically considered the relationship between the human components (volition, habituation, and performance capacity) and how those factors influenced the individual's ability to engage in social tasks within their chosen community environment. This paradigm was maintained throughout the development of the study by ensuring that the study design included data collection focusing on all areas of person, task, and environment and how the participants perceived these components to be related.

MOHO also considers the relationship between an individual's habits, roles, and routines and their ability to function within their environment (Kielhofner, 2008). This was a guiding paradigm for this research study due to its focus on the relationship between individuals with PD and their participation in social and community activities within their environment. The study also considered how the development of habits and routines related to the occupation of boxing can be used to influence social and community engagement. These concepts were used to develop the first research question that looked at the experience of the participant's boxing routine and its impact on social tasks and tasks within a community environment.

The guiding principle for MOHO is to direct the use of occupation within clinical practice (Kielhofner, 2008). "MOHO offers a broad and integrative view of human

occupation" (Kielhofner, 2008, p. 4). This is accomplished through the examination of multiple phenomena, one of which is volition. "Volition refers to the motivation for occupation" (Kielhofner, 2008, p. 12). MOHO examines motivation through the lens of a person's experiences, their satisfaction with an occupation, their ability to participate in an occupation, and many other factors (Kielhofner, 2008). Volition is a strong component of this study as perceived motivating factors are being examined for both social and community engagement and ongoing participation in boxing programming which is the focus of the second research question.

Significance of the Study

This study has the potential to have significant influence on the profession of occupational therapy. As the number of individuals suffering from PD continues to grow, occupational therapy clinicians will be called upon to provide more services to these individuals. This study will increase knowledge related to understanding the impact that non-contact boxing has on the social and community-based lives of these individuals. This knowledge will allow occupational therapists to understand how boxing can be used to impact the quality of life for individuals with PD.

This study will also acknowledge the need for continued research in the use of boxing as a feasible method to manage symptoms associated with PD. An increased knowledge in this topic area will assist in directing future research to continue to build evidence for practice. The continued growth of evidence in this area will assist in future development of funding for continued occupational therapy services in the area of community-based PD treatment.

Summary

Parkinson's disease is a neurological disorder that affects the lives of millions of Americans. Individuals with PD commonly experience both motor and non-motor symptoms that negatively impact their quality of life (Opara et al., 2012). Non-contact boxing has been identified as a method for managing the negative symptoms associated with PD (Combs et al., 2011). However, there is no literature that examines the perceptions of the individuals with PD on their boxing experience. This study utilizes the MOHO paradigm as a basis to examine the perceptions of individuals with PD on how boxing has impacted their social and community engagement and how these perceptions have influenced their ongoing participation in boxing programming. This type of research is beneficial to the practice of occupational therapy by providing an increased knowledge base of how the occupation of boxing can be used to impact the quality of life of individuals with PD. In addition, this study will aid in directing future research to develop evidence-based treatment methods for individuals with PD.

SECTION TWO: REVIEW OF THE LITERATURE

This section will review the current available literature that supports this research study. The researcher primarily utilized Google Scholar and Eastern Kentucky University's library search engines to conduct literature searches. A multitude of databases were used, however Academic Search Complete and CINAHL Complete were used most often. The researcher initiated the search by using specific terms including Parkinson's disease, boxing, and social engagement. However, due to the limited findings the researcher expanded the search using more general terminology such as quality of life, exercise, and disability.

Parkinson's Disease

"Parkinson's disease (PD) is a progressive neurodegenerative disorder manifested by a broad spectrum of motor and non-motor features" (Jankovic, 2008, p.374). The motor symptoms that are most commonly associated with PD include tremors, postural instability, rigidity, difficulty with walking, and gait disturbances (Jankovic, 2008; Opara, Brola, Leonardi, & Blaszczyk, 2012). Non-motor symptoms that are frequently related to PD include cognitive abnormalities, sleep disturbances, and social and emotional deficits (Jankovic, 2008; Opara et al., 2012). Both motor and non-motor PD symptoms have been shown to interfere with an individual's ability to effectively complete activities of daily living (Jankovic, 2008) and adversely impact their overall quality of life (Opara et al., 2012).

Parkinson's Disease and Exercise

A substantial amount of literature supports the benefits of exercise on the management of PD symptoms. Evidence supports that participation in various forms of

exercise leads to an overall improvement in motor function within individuals with PD (Dibble, Addison, & Papa, 2009; Reuter, Engelhardt, Stecker, & Baas, 1999; Schenkman, Hall, Kumar, & Kohrt, 2008; Shulman, Katzel, Ivey, Sorkin, Favors, Anderson,…Macko, 2013). Dibble and colleagues (2009) provide multiple pieces of supportive evidence through their systematic literature review that focused on the impact of exercise for on PD symptoms related to balance. The review found that regardless of the strength of the study or the type of provided exercise, all studies noted improvements in both balance and postural stability (Dibble et al., 2009). Shulman and colleagues (2013) authored a comparative study that focused on the impact of three different types of exercise on the motor symptoms of PD. The exercises ranged from high-intensity to stretching and resistance training. The study found that all three types of exercise improved at least one aspect of physical functioning for the individuals with PD (Shulman et al., 2013). More specifically, both Reuter and colleagues (1999) and Schenkman and colleagues (2008) examined the effects of intensive, endurance style exercise programs on individuals with PD. Both studies found that participants demonstrated improvement in motor function over a short and extended period of time (Reuter et al., 1999; Schenkman et al., 2008). These studies are supportive of this study because non-contact boxing would be considered an intensive, endurance style exercise modality.

In addition to short-term benefits, literature also supports the benefits of ongoing exercise on the extended motor benefits for individuals with PD (Reuter et al., 1999; Schenkman et al., 2008; States, Spierer, & Salem, 2011). Two previously discussed studies (Reuter et al., 1999; Schenkman et al., 2008) identified extended motor benefits on individuals with PD who are participating in ongoing intensive, endurance style

exercise. States and colleagues (2001) extended these concepts by considering whether an ongoing, community-based exercise group would be beneficial for individuals with PD over an extended time frame. The study found that subjects were continuing to demonstrate progress in motor skills after a 14-month time frame (States et al., 2001). This demonstrates the potential for a community-based boxing program to be used as a feasible method for PD symptom management.

Participation in an exercise regimen has also been shown to positively impact the non-motor deficits associated with PD (Cruise, Bucks, Loftus, Newton, Pegoraro, & Thomas, 2011). A study completed by Cruise and colleagues (2011) looked at the impact of exercise on the cognitive functioning of individuals with mild to moderate PD. The authors found that the individuals who participated in exercise demonstrated improved frontal lobe based executive functioning (Cruise et al., 2011). While there is limited evidence in this area, the strength of this study and the need for further studies supports the possibility that exercise may impact cognitive functioning that interferes with social and community engagement for individuals with PD.

Finally, physical exercise has been linked to improved quality of life for individuals with PD (Rodrigues de Paula, Teixeira-Salmela, Coelho de Morais Faria, Rocha de Brito, & Cardoso, 2006). A study by Rodrigues de Paula and colleagues (2006) found that individuals with PD who participated in group exercise classes reported improvements in their quality of life, specifically in the areas of physical abilities, emotional reactions, and social interactions. These findings are supportive of this study because it suggests a likely link between exercise and social and community engagement.

Non-Contact Boxing as a Form of Exercise

Evidence is available to support utilizing non-contact boxing as an effective form of exercise (Bellinger, Gibson, Oelofse, Oelofse, & Lambert, 1997; Bosch, Poloni, Thornton, & Lynskey, 2012). Bellinger and colleagues (1997) assessed whether non-contact boxing provided equal energy expenditure as participation in the conventional physical activity of running within a healthy adult population. The study found that boxing in a studio provided a more intensive physical response than boxing in a laboratory and that boxing provided a similar level of exertion to running (Bellinger et al., 1997). Bosch and colleagues (2012) examined a non-traditional form of boxing utilizing a Nintendo Wii gaming system. The authors concluded that 30 minutes of Wii boxing provides moderate to vigorous aerobic activity to healthy adults (Bosch et al., 2012). This literature validates the use of non-contact boxing as a legitimate form of exercise that could be used as an intervention. It also supports the use of boxing as an intervention within a natural context.

Parkinson's Disease and Boxing

There is very limited evidence available that specifically examines the impact of non-contact boxing on the PD population. However, the evidence that is available suggests that non-contact boxing provides both motor and non-motor benefits and improved quality of life for individuals with PD (Combs, Diehl, Chrzastowski, Didrick, McCoin, Mox,…Wayman, 2013; Combs, Diehl, Staples, Conn, Davis, Lewis, & Schaneman, 2011). Combs and colleagues (2011) completed a case series study to better understand the impact of boxing training on the disease severity of individuals with PD. The twelve outcome measures which were used included ten motor scales, one activities of daily living scale, and the Parkinson Disease Quality of Life Scale (Combs et al.,

2011). The researchers found that five out of six study participants that completed a 12-week boxing program demonstrated improvement in all twelve outcome measures (Combs et al., 2011). To further the conclusion of the first study, Combs and colleagues (2013) completed a randomized controlled trial to evaluate the impact of group boxing training versus traditional group exercise on the quality of life and physical function of individuals with PD. While there were improvements within both groups, the study did not find any significant differences between boxing and traditional group exercise (Combs et al., 2013). This evidence supports the use of community-based boxing for individuals with PD. It also demonstrates the need for further research to evaluate the impact of boxing on other areas of life for individuals with PD such as social and community engagement.

Parkinson's Disease and Other Physical Occupations

While the evidence surrounding PD and boxing is limited, there is beginning to be literature to support the idea that a variety of physical movement based occupations provide benefits to individuals with PD. The largest amount of literature focuses on the use of dancing to improve the functional ability of individuals with PD (Duncan & Earhart, 2012; Foster, Golden, Duncan, & Earhart, 2013). Duncan and Earhart (2012) focused on the impact of a community-based Argentine Tango program on the physical function and disease severity of individuals with PD. Their study found that all physical movement outcome measures improved for participants after participating in a 12-month dance program (Duncan & Earhart, 2012). Foster and colleagues (2013) expanded upon that research by examining how that same Argentine Tango program impacts the activity participation of individuals with PD. This study indicated study participants reported

improved abilities to participate in daily activities, increased participation in new activities, and improved quality of life (Foster et al., 2013).

Bicycling has also been identified as a physical occupation that may contribute to improved PD symptomology. Snijders and Bloem (2010) completed a case study of one individual with PD and the use of cycling to improve his freezing gait. Based on this case study, the authors concluded that "cycling may offer a useful approach for exercise training in patients with Parkinson's who are "grounded" by severe freezing of gait" (Snijders & Bloem, 2012, p. 362).

Currently, much of the literature addressing the benefits of specific physical occupations on the symptoms of PD is sparse or of low-quality. However, it appears that focus on these topics are growing as evidenced by articles in two occupational therapy discipline specific publications. Both articles acknowledge the early support for the use of physical occupations as an intervention for PD and discuss the beginnings of research to examine additional occupations such as glassblowing and rowing (Lathrop, Malsch, Massart, Goloff, Bebeau, & Pickett, 2016; University of Wisconsin-Madison, 2015). This increasing interest in the benefits of physical occupations on the symptoms of PD validates the importance of continuing to examine non-contact boxing and its benefits for individuals with PD.

Connecting Social Participation and Community Engagement to Quality of Life

Practitioners in the field of occupational therapy do not necessarily agree on how to define occupation. Trombly (1995) describes occupation as purposeful activities that were meaningful and had the ability to keep one engaged. Other practitioners indicate that occupation may be goal-directed, contextually or socially appropriate, intrinsically

motivated, or necessary to meet the demands of daily life (Hammell, 2004). Even though there is some variation in the specific components that make-up the term occupation, the thought that participation in chosen occupations plays an important role in the life of an individual is consistent.

In her 1995 Eleanor Clarke Slagle Lecture, Trombly discussed research that indicated that participation in meaningful occupations may be a motivational factor for continued occupational engagement. Hammell (2004) stated that "occupational engagement has been found to contribute to the experience of a life worth living" (p. 301). In specific relation to PD, research has found that individuals with PD that participate in higher levels of chosen activities have better health related quality of life indicators. Based on the literature, it would be difficult to dispute that participation in occupation holds an important role in the life of the individual.

According to the World Health Organization (WHO; 2016), quality of life is defined as:

> "an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns. It is a broad ranging concept affected in a complex way by the person's physical health, psychological state, personal beliefs, social relationships and their relationship to salient features of their environment" (para. 2).

Within this research study, social engagement will be defined as participation in occupations in social situations involving peers, family, and communities and promote an interdependent social interactions (AOTA, 2014, p. S21). Community engagement is a

sub-component of social engagement and will be defined as "activities that result in successful interaction at the community level (i.e., neighborhood, organizations, work, school)" (AOTA, 2014, p. S21). It is clear that social and community engagement are components that influence quality of life as defined by the WHO.

The understanding of the terminology indicates that social and community engagement, as a form of occupational engagement, are associated with quality of life on the most basic level. However, there is also additional literature to support the impact that social and community engagement has on quality of life. Qualitative research shows that individuals with PD identify social interactions as a fundamental component of quality of life (Dauwerse, Hendrikx, Schipper, Struiksma, & Abma, 2014; Engstrom & Nordeson, 1995). Engstrom and Nordeson (1995) collected qualitative data through interviews of individuals with progressive neurological disease including PD to understand how they subjectively define quality of life. The authors concluded that within one identified theme, "family life, emotional ties, and friendly solidarity at work stand out as fundamental things in life" (Engstrom & Nordeson, 1995, p. 180). Dauwerse and colleagues (2014) also completed a qualitative study that focused on the perspectives of individuals with PD regarding elements that influenced their quality of life. The study found that three out of four identified themes – communication, ownership, taboos, and image, inter and intra personal, and societal – included elements of social and community engagement (Dauwerse et al. 2014). Both of these studies indicate that consideration of social and community engagement is important when attempting to understand the quality of life for individuals with PD.

Conclusion

The purpose of this literature review was to examine the evidence available to support and guide this research study. This research will be aimed at analyzing the perceptions of individuals with PD on their experiences with non-contact boxing and the impact that boxing has on their social and community engagement. Overall, there is a limited number of studies that directly evaluate the benefits of boxing on the symptoms of PD. However, there was a good amount of evidence to support the benefits of traditional exercise for management of both motor and non-motor symptoms associated with PD. Evidence is also available to support the use of boxing as a form of exercise.

Due to the limited number of articles available on the topic of boxing, this literature review also included articles that evaluated the benefits of other physical occupations on PD symptomology. This group of literature is also very narrow with the primary evidence being focused on the use of dancing as an intervention to address symptoms of PD. However, reports show that research is being established to address a variety of occupations.

While there is evidence to support the use of non-contact boxing as an intervention for PD, there is currently no research that examines the perceptions of the individuals participating in the boxing program and how that program has impacted their social and community engagement. There is evidence to demonstrate that social and community engagement is a fundamental component of quality of life for this population. Therefore, there is a need for further research to understand how individuals with PD perceive their experiences with non-contact boxing as it relates to social and community

engagement in order to examine the feasibility of utilizing boxing as an intervention to improve the quality of life of these individuals.

SECTION THREE: METHODS

This phenomenological research study will use qualitative data collection methods to explore the perceptions of individuals with PD who participate in a community-based, non-contact boxing program about their social and community engagement experiences. "Phenomenology concentrates on the need to study human consciousness by focusing on the world that the study participants subjectively experience. By so doing, it is said deeper insights into human nature can be gained" (Maggs-Rapport, 2000, p. 221). This research method will be utilized due to its ability to best address the study's research questions by allowing the researcher to examine the occupation of boxing through the perceived experiences of actual participants.

Due to phenomenology's exploratory nature, it traditionally utilizes methods such as interviews, photography, and observation to collect qualitative data which allows the researcher to develop an in-depth understanding of the meaning of individual's experiences (Maggs-Rapport, 2000). In addition, phenomenology only requires a basic understanding of a phenomena by the researcher in order to successfully implement its methodology. Therefore, this research method is appropriate to develop a better understanding of the subjective experiences of non-contact boxing phenomena within the PD community – a phenomena that has previously been unaddressed.

Setting

The research will be conducted at a boxing club located in central, Kentucky. The boxing club is a fitness club that offers traditional boxing and kickboxing classes for individuals of all levels. One mission of this boxing club is to offer a judgement-free place for individuals of all fitness levels to build strength and health through boxing. As

well as offering traditional boxing classes, the boxing club offers non-contact boxing classes specifically tailored towards individuals with Parkinson's disease.

This boxing club was chosen as the setting for completion of this research study for a variety of reasons. The owners of the facility have verbalized their support for the proposed research. This will allow the researcher greater access to the program and increase the ability for a more thorough data collection. The individuals in the program have been participating for various periods of time and are at all different stages of their PD. Therefore, this setting will allow for a convenience sample that is representative of a broad range of individuals with PD who are participating in non-contact boxing.

Recruitment Procedures

This study recruited participants from a boxing club in central, Kentucky. All individuals with PD who were participating in the PD specific non-contact boxing classes were invited to participate in the study. Exclusion criteria included any individuals who did not speak English or any individuals with severe cognitive and/or communication deficits related to PD, or otherwise, that would prevent them from participating in the interview portion of the study.

The researcher attended multiple PD specific boxing classes to orally provide information regarding the study and request participation. A written explanation of the study was provided for prospective participants to take home. The appropriate consent forms were also available to review and sign at that time or take home and return at a later date.

Project Methods

Data Collection

In order to obtain an understanding of participant's perceptions on the impact of non-contact boxing on their social and community engagement and the factors that influence their continuation in the boxing program, qualitative semi-structured interviews were conducted. The interviews were conducted face-to-face by the primary researcher utilizing a question guide (Table 1). The interviews were conducted at a public location of the participants choosing (ie: the boxing club, a local coffee shop, etc.) in order to facilitate a comfortable and supportive environment. All interviews were audio recorded and transcribed exactly for future data analysis.

The researcher also completed observations of boxing classes in order to gather data that was supportive of the experiences elicited from the interviews. Supportive observations were documented by the researcher in field notes.

Table 1: Question guide for semi-structured interviews

Topic	Probe Questions	Follow-up Questions
Introduction	Tell me about yourself and your experience with PD? What stage is your PD?	What are the symptoms you experience with your PD? How does your PD affect you and your life?
Social Engagement	Tell me about your social activities (ie: spending time with friends, building new relationships, activities you enjoy doing with others)?	How has PD impacted your social interactions? Have your social interactions changed since you started boxing? How has boxing impacted your social interactions?
Community Engagement	Tell me about the community activities you participate in (ie: support groups, religious activities, community transportation, shopping)?	How has PD impacted your ability to participate in community activities? Has your ability to be involved in community

		activities changed since you started boxing? How has boxing impacted your community activities?
General Perceptions of boxing	What do you think of the idea of non-contact boxing for people with PD?	What does your family and friends think about boxing? Have your attitudes towards boxing changed?
Continued Participation in Boxing	Why do you come to boxing?	What made you come to boxing initially? Why do you keep coming to boxing? What impact has boxing had on your life?

Data Analysis

The phenomenological design of this study lent itself to the collection of large amounts of data. This study utilized Colaizzi's method of data analysis because it is a structured framework that is appropriate to analyze the complex nature of phenomenological data (Sanders, 2003).

A foundational component of Colaizzi's method is to gain a thorough knowledge of the collected data in order to truly understand the entire experience of the participants (Shosha, 2012). The researcher served as the interviewer which allowed for a better opportunity to gain a complete understanding of the experiences of individuals with PD who were participating in non-contact boxing. The researcher also repeatedly reviewed both the audiotaped interviews and the associated transcriptions on multiple occasions to ensure a complete understanding of each individual experience.

Next, "Colaizzi (1978) suggests that you should extract significant phrases and statements from the transcripts that together form the whole meaning of the experience" (Sanders, 2003, p. 295). The researcher thoroughly reviewed the interview transcriptions in order to identify significant statements that could then be used to formulate common

meanings that represented a combined participant experience. This process was done in partnership with the researcher's reflexivity journal to ensure that any personal assumptions impact the formulated meanings as minimally as possible.

Once all the meaningful statements were formulated, the researcher used coding to organize the meanings into emergent themes. It was necessary for the researcher to identify the process for interpreting specific themes (Sanders, 2003). The researcher used a coding book to define and discuss specific identified themes within the field notes. The themes demonstrated an exhaustive explanation of the experiences of individuals with PD, as they related to their social and community engagement, who were participating in a non-contact boxing program. The exhaustive themes were then reviewed with repetitively and misused themes being eliminated in order to determine the fundamental structure of the phenomena (Sanders, 2003). This was accomplished through ongoing review of the original transcripts, formulated meanings, and emergent themes by both the researcher and the researcher's study mentor.

"Colaizzi (1978) suggests that the final validation stage of data analysis should involve returning to the participants for a further interview, to elicit views on the essential structure of the phenomenon to ensure that it represents their experience" (Sanders, 2003, p. 301). The researcher provided the analyzed descriptions to the participants during a face-to-face discussion (member check) in order to ensure their agreement that it truly represented their overall experiences. The field notes created from the boxing class observation were also compared to the identified codes from the transcripts for triangulation. This process added additional rigour within the study (Sanders, 2003).

Trustworthiness

Due to the qualitative nature of this research study, methods to increase the confirmability of the research outcomes were necessary to ensure a valid and reliable study. The three methods that were used to promote the validity of this study were the use of a reflexivity journal, an audit trail, and triangulation.

Triangulation is a method of using multiple methods of data collection to ensure a comprehensive understanding of the phenomena (Maggs-Rapport, 2000). In this study, both semi-structured interviewing and observation were used for data collection. Utilizing two methods of data collection allowed the researcher to obtain a more complete picture of the data, allowing the researcher to develop a well-rounded understanding of the examined experiences (Maggs-Rapport, 2000). The field notes from the observation was then compared to the codes to ensure consistency. Additionally, the study findings were compared to the current literature as another form of triangulation.

A reflexivity journal was also be used as a method to increase the trustworthiness of this study's outcomes. A reflexivity journal allowed the researcher to examine her personal beliefs related to the research and provide transparency regarding the possible biases that may have influenced the study (Ortlipp, 2008). In addition to a reflexivity journal, an audit trail was also be utilized to increase the transparency of the study. Audit trails provided both the researcher and future readers confirmation that the study was developed using strong research methodologies and was supported by evidence (Carcary, 2009). "Quality findings, uncovered through an in-depth and transparent research process are critical when used as the basis of further research studies" (Carcary, 2009, p. 21).

Therefore, a reflexivity journal and audit trail were necessary to provide a transparent viewpoint of this study in order to confirm its trustworthiness.

Ethical Considerations

The use of interviews and observations in this research study promoted increased engagement between the researcher and the participants, leading to an increase in potential risk for the participants. Creswell (2014) discussed the need for researchers to assess the potential risk of the study on their participants, giving specific attention to vulnerable populations, through the institutional review board (IRB) process. Prior to the implementation of this study, the researcher received approval from Eastern Kentucky University's IRB (Appendix A).

In order to reduce the risk of participant exploitation, the researcher provided full transparency regarding the research process to all study subjects. The researcher also obtained informed consent from all participants. Participation in the interview process or during observations was optional and participants could opt out at any time. The topic of research was also been developed in a manner that results would be beneficial to both the researcher and the participants. Finally, the researcher ensured that research findings were provided directly to the participants once analysis is completed. The researcher received no payment or financial benefit from the participants.

The protection of personal privacy was an ethical consideration of this research study. The researcher focused extra attention on ensuring that participants' privacy was protected through using non-patient-identifiable information. The researcher removed names, ages, and diagnoses other than PD from the data to ensure personal and medical privacy is protected.

Timeline of Project Procedures

See Table 2 for the timeline of the study.
Table 2. Timeline of the Project Procedures

Activity	Initiation Date	Estimated Completion Date
Submit IRB application	December 16, 2016	Determined by EKU's IRB
Participant recruitment	March 2017	April 2017
Data collection (interviews and observation)	May 2017	July 2017
Transcription	July 2017	August 2017
Coding/Theme development	August 2017	October 2017
Review themes with participants	October 2017	October 2017
Write final capstone report	November 2017	December 2017
Present final capstone	Mid-December 2017	N/A

SECTION FOUR: RESULTS AND DISCUSSION

This phenomenological study focused on the perceptions of individuals with Parkinson's Disease (PD) on their experiences with non-contact boxing in relation to its impact on their social and community engagement. The identified research questions were addressed using a phenomenological design in order to obtain a thorough and honest understanding of the subjective experiences of the study participants (Maggs-Rapport, 2000). As discussed in previous sections of this capstone report, qualitative methods including semi-structured interviews and observation were used for data collection.

Completing a phenomenological study can be daunting due to the amount and complexity of the data that must be analyzed. Use of a structured data analysis process, such as Colaizzi's method, can be beneficial in assisting the researcher in interpreting and sharing their understanding of the data (Sanders, 2003). It is also necessary to provide a detailed description of the data collection and analysis process in order to allow the reader to make determinations of the generalizability of that data (Sanders, 2003). While the basic components of this study's design have been highlighted in section three of this report, the full implementation of the data analysis process and the corresponding results have not yet been discussed. Therefore, a detailed description of the analysis process using Colaizzi's method and a discussion of the results which were derived from the data will be discussed in this section.

Results

Participant Characteristics

The study was conducted with 10 participants from a convenience sample who were currently participating in a PD specific, non-contact boxing class. The researcher

was unable to recruit any individuals who were no longer participating in non-contact boxing, but who had participated within the last year. There were 3 female and 7 male participants. Ages of participants ranged from 52 to 84 years old with a mean age of 64 years. All participants were Caucasian. Participants had been participating in non-contact boxing ranging from approximately three months to five years. Participants reported that they typically attended the 75 minute class two to three times per week.

Data Analysis

Colaizzi's method, as modified by Sanders (2003), was the process that was used for data analysis. The first step in Colaizzi's method is for the researcher to familiarize themselves with the data in order to understand how the participants are subjectively describing their lived experience (Sanders, 2003). All ten interviews were conducted and transcribed by the researcher allowing the researcher to be extremely acquainted with the data. Next, "Colaizzi (1978) suggests that you should extract significant phrases and statements from the transcripts that together form the whole meaning of the experience" (Sanders, 2003, p. 295). During the analysis process, the researcher utilized printed transcripts to highlight 538 significant statements with an average of 54 statements coming from each interview.

The identified significant statements were then transferred into an Excel spreadsheet in order to increase organization, remove repetitions, and prepare to begin the formulated meanings component of Colaizzi's method of data analysis. Formulated meanings allowed the researcher to extract general meanings from the significant statements while still maintaining the context (Sanders, 2003). A total of 307 formulated

meanings were given to the significant statements. Table 3 provides examples of how formulated meanings were assigned to significant statements.

Table 3: Examples of significant statements and corresponding formulated meanings.

Significant Statement	Formulated Meaning
"At boxing everybody will give each other high fives and say good job you couldn't do that before and now you can do it."	Individuals with PD feel like their boxing class provides them with a support system.
"I've been exercising before I was diagnosed and I've been exercising since."	A PD diagnosis does not change the occupations that an individual finds valuable.
"I feel like I'm in better shape mentally & physically than I was when I was diagnosed."	Individuals with PD believe that they have experienced physical and mental benefits from participating in non-contact boxing.

The next step was to group the formulated meanings into categories and themes (Sanders, 2003). Within the Excel spreadsheet, the formulated meanings were further analyzed, additional repeats were removed, and grouped in corresponding categories. These categories were then transferred to index cards in order to provide the researcher with a visual representation of the relationships between the various categories. "Colaizzi (1978) advocates that the researcher should integrate all the resulting ideas into an exhaustive description of the phenomenon" (Sanders, 2003, p. 299). During the analysis process, one overarching theme became apparent as the exhaustive description of the phenomenon. Within that description, three primary themes began emerging with additional sub-themes evolving in order to fully understand the themes. In vivo coding was utilized as much as possible and is reflected in the themes. Table 4 highlights each

theme and sub-theme that was identified. Direct quotes from the participants are used to provide support for the themes.

Table 4. Identified themes and sub-themes

Exhaustive Description of the Phenomenon "I fought to get in here" because occupations are important.		
Theme	**Theme**	**Theme**
"PD is not pretty. You know what the destination is, but we also got a journey to get there."	"I don't have to be Muhammed Ali. It's not about that."	"The people I've met here and spending time with will be friends forever."
• Past influences the future.	• Boxing offers physical, cognitive, and emotional benefits.	• Individuals in shared occupations provide support and encouragement to one another.
• Old and new occupations are valuable.	• Boxing helps fight PD.	• Occupations help build relationships.

Themes

Exhaustive Description of the Phenomenon: "I fought to get in here" because occupations are important.

As the researcher became familiar with the data, it became evident that all of the participants placed importance on the occupation of non-contact boxing. Participants frequently made statements including "I love boxing", "I get more benefits from boxing than from my medication", and "I enjoy my time over there [at boxing]", indicating the value that they gave to this specific occupation. However, the participants also described a variety of additional occupations they perceived to be valuable and beneficial, such as working, shooting guns, and wood carving. While describing their boxing experience, participants would also often spontaneously describe the meaningful components of other preferred occupations. Therefore, the researcher was able to understand that, while study

participants placed value on the occupation of boxing, they also considered all of their chosen occupations to be important.

The concept behind the exhaustive description of the phenomenon that occupations hold importance in the lives of individuals with PD was supported by the additional themes that emerged throughout the data analysis. Each theme holds importance on its own, but all the themes illustrate components of occupations that demonstrate reasons why occupations are important. This idea is also descriptive of the subjective experiences of all participants as each individual discussed the important role that both boxing and other occupations played in their lives.

Theme 1: "Parkinson's Disease is not pretty. You know what the destination is, but we also got a journey to get there."

Participants with PD acknowledged the challenges that they could face during the progression of their chronic condition. They were aware of the expected prognosis related to PD and the burden that this knowledge carried. One participant stated, "Parkinson's Disease is a bummer of a diagnosis." Another stated, "It is one of those things you hear and it just kind of knocks you off your feet." Even though the participants with PD understood that their disease may negatively impact their lives, they were also motivated to enjoy the life that they have. All the participants in the study identified boxing and other preferred occupations as ways to make their life more enjoyable and meaningful.

One sub-theme that emerged during the analysis of this theme was that the past influences the present. It became clear to the researcher that individual identity prior to their PD diagnosis did not change after their PD diagnosis. An individual's personality traits and preferred occupations prior to their diagnosis continues to strongly impact their decisions regarding the occupations they choose to participate in after their diagnosis.

When asked how PD had impacted their social interactions one participated stated "I don't get out a lot, but that's not necessarily different than before." The participants with PD also strove to continue being involved in their previous activities even if the symptoms of the PD influenced their ability to engage in those tasks as fully as they previously did. This was indicated by the statement, "I've not stopped anything. I still do all the volunteering that I've done in the past. I'm just…I feel a step back."

The next sub-theme that emerged was that both old and new occupations are valuable to individuals with PD. The study participants acknowledged that a large component of maintaining a meaningful life while having PD was by continuing to participate in their previously preferred occupations. One participant stated, "I've still been working one day a week. That's been very rewarding." In addition, the participants also perceived seeking out and participating in new occupations to have value. Some new occupations that were identified included participating in the PD support group, collecting annual donations for PD charities, and singing. The study participants also specifically discussed the importance that they gave to non-contact boxing which was a new occupation after diagnosis for all participants. The value that some individuals with PD place on boxing is illustrated by the comment, "[boxing] just gives you something meaningful and constructive to focus on that is actually adding value to the progress you are trying to make."

Theme 2: "I don't have to be Muhammed Ali. It's not about that."

It is difficult to discuss boxing without thinking about some of the great boxing legends such as Muhammed Ali and the amazing physical abilities that they possess. However, individuals with PD made it clear that their decision to participate in non-

contact boxing was not to become a skilled boxer. The researcher found that the study participants perceived a variety of benefits to come from their participation in boxing which is why they valued and continued to engage in the occupation. One subject stated, "If I wasn't getting the results that I'm getting then I probably wouldn't enjoy it so much."

The subject participants identified a variety of physical, cognitive, and emotional benefits they felt they gained from boxing participation. Subjects perceived these benefits to be so significant that a sub-theme of boxing offers physical, cognitive, and emotional benefits emerged. All study participants perceived receiving physical benefits from boxing and identified these benefits as a reason for continued participation. Subjects identified physical benefits as decreased tremors, improved balance, increased strength, and improved coordination. Participants also contributed some cognitive benefits to boxing. Statements such as "I think cognitively it helps me because I don't know what the other person is going to say to do" and "it challenges you to think and act at the same time" were made to illustrate the perceived cognitive benefits of boxing. Emotional benefits of engaging in boxing were also identified. Individuals with PD believe that non-contact boxing provides them a method of stress reduction, frustration management, and relaxation. One subject stated, "It helps take the anxiety and stress down. If I was doing something really important, I would probably want to go have a workout before I did it."

The sub-theme that boxing helps to fight PD also emerged during the data analysis process. This sub-theme was a strong component that supported the larger theme that individuals with PD participate in boxing for benefits other than becoming a skilled boxer, as it was named by 100 percent of study participants. The participants with PD

absolutely believe that participation in non-contact boxing assisted them in fighting the progression of their PD and was a major reason for continuation in the occupation. Subjects made statements such as, "I keep going because I hope it slows down the relentless progressive deterioration that I know I'm in store for."

Theme 3: "The people I've met here and spending time with will be friends forever."

The participants with PD placed importance on their relationships. During conversations with the study participants, the researcher confirmed the value of being connected to others for individuals with PD. The participants described a variety of relationships including family relationships, established relationships, and newly developing relationships. A common thread amongst these relationships was that participation in shared occupations brought people together.

A sub-theme that emerged to support this theme was that occupations helped build relationships. Subjects stated that they had the opportunity to build relationships with others who were involved in boxing, but they were also connected to people who they spent time with during other occupations. One participant stated, "You get to know these guys [at boxing] and you want to catch up with them." Another stated, "I've got a number of pretty good friends that I made at church." Shared occupations, such as boxing, brought people together to help foster relationships.

A second sub-theme was the concept of the supportive and encouraging nature of these relationships. The participants with PD felt like the people they chose to build relationships with, particularly their boxing peers, provided them with a lot of needed support and encouragement. The study subjects felt supported and connected to others who were going through similar experiences. "There is a core group of people [at boxing]

and we all understand each other" was a statement made which illustrated this concept. Those with PD also perceived that they received encouragement from engaging in boxing and other shared occupations with peers. One participant stated, "At boxing everyone will give each other high fives and say good job you couldn't do that before and now you can do it." The perceived support and encouragement was a strong factor that contributed to ongoing participation in non-contact boxing for individuals with PD.

Discussion

This study was unique in that it is the only study that examined the subjective experiences with non-contact boxing with a specific focus on social and community engagement for individuals with PD. As far as the researcher is aware, it is the only study that demonstrates how individuals with PD perceive the importance of occupation in their lives prior to and after their diagnosis. The overarching finding of this study was that participation in occupations was important and valuable to the individuals with PD. This finding was supported by themes that emerged throughout the study including the importance of both old and new occupations which were influenced by the past, the importance of the benefits gained from participation in occupations, and that shared occupations brought people together. The study focused on the occupation of boxing and found that this was a valued occupation for individuals with PD. However, the study also found that all valued occupations held an important role in the lives of adults with PD.

The development of the study, including the two research questions, were strongly focused on the occupation of boxing and the perceived social and community experiences related to boxing. Therefore, it was expected that the subject responses would be associated primarily with their boxing experiences. This did occur and the

entirety of the subjects described boxing as a beneficial and valuable occupation that helped them to build supportive relationships. However, the subjects also often spontaneously discussed other important occupations in their lives. The researcher noticed that individuals with PD felt similarly about these occupations as they did to boxing, unexpectedly indicating that preferred occupations overall played an important role in the lives of the studied population.

Research Question 1: How do individuals with PD perceive non-contact boxing to impact their social and community engagement?

This study found that individuals with PD perceived non-contact boxing to impact their social and community engagement in a variety of ways. The most direct impact on social and community engagement identified through this study was that participation in boxing allowed participants to build supportive and encouraging relationships. Boxing itself became a valuable social activity for participants by facilitating new relationships, providing support through connecting individuals going through similar experiences, and providing opportunities for these relationships to expand to activities outside of boxing.

This finding was expected and aligns with a wealth of other literature that identifies shared activities as a way to build social connectedness for individuals with a variety of disabilities (Abell, Baird, & Chalmers, 2017; Giacobbi, Dietrich, Larson, & White, 2012; Giacobbi, Stancill, Hardin, & Bryant, 2008). A study about individuals with PD who participated in group singing found that subjects placed value on the sense of camaraderie that developed during the activity (Abell et al., 2017). Giacobbi and colleagues (2012) found that women with Multiple Sclerosis who participated in group exercise linked the activity to making new friends and developing camaraderie with their

peers. Finally, a study about individuals with physical disabilities participating in wheelchair basketball identified social opportunities as a benefit of involvement in the activity (Giacobbi et al., 2008). All of these studies support the finding of this study that non-contact boxing is perceived to foster supportive and encouraging relationships for individuals with PD. These studies are also supportive of the broader finding of this study that shared occupations in general pull people together to foster valuable relationships.

Additionally, this research question was addressed through the research finding that individuals with PD perceived participation in non-contact boxing provided physical and cognitive benefits. This replicated the findings of previous research that indicated that non-contact boxing led to improvements in physical and cognitive capabilities for individuals with PD (Combs et al., 2011, Combs et al., 2013). This was similar to conclusions made by Foster and colleagues (2013) and Duncan and Earhart (2012) that the shared exercise of dancing the Argentine Tango provided physical benefits to individuals with PD. Participants in our study also discussed the emotional benefits of participating in the occupation of boxing. In terms of boxing, this was an additional finding that is not present in previous literature. However, previous research does support that non-specific physical exercise improved emotional responses in individuals with PD (Rodrigues de Paula et al., 2006). The study subjects perceived these combined benefits to contribute to their ability to continue to participate in their valued social and community activities.

This finding is important because it demonstrates the link between physical activity and social engagement. This study found that participation in non-contact boxing provided both physical and social benefits to adults with PD. The subjects also identified

both of these benefits as reasons for continued participation in the exercise program. In their study about the Argentine Tango, Foster and colleagues (2013) found that "participation in socially engaging and functional skill-based exercise promotes participation in instrumental, leisure, and social activities" (p. 244). While this study did not make that same connection directly, the findings did suggest that engagement in a shared activity that provides physical benefits is linked to participation in socially beneficial occupations and questions the need for further research in this area.

Research Question 2: Do individuals with PD perceive the impact of non-contact boxing as it relates to social and community engagement, to influence their decision to continue to participate in this type of program?

This research question was also addressed through the finding that participation in non-contact boxing helped to build valuable relationships for individuals with PD. The study participants identified these relationships as one of the motivating factors for continued participation in the activity. Similar findings were also identified in previous research by Abell and colleagues (2017) and Giacobbi and colleagues (2012). Both of these studies, as previously described, found that the social impact of their focus activities were a motivating factor for continued participation in the activity.

The perceived combined benefits of non-contact boxing were also identified as a motivating factor for choosing to continue to participate in this occupation. Most specifically, the perception that non-contact boxing helped to fight the progression of PD was a significant motivating factor for continued participation. This finding demonstrated full saturation within the study as it was identified by 100 percent of study participants,

indicating that the belief that boxing combats PD is a strong motivating factor for ongoing participation in the occupation. While other studies did support the concept that engagement in physical occupations fights the progression of PD (Combs et al., 2011; Combs et al., 2013; Foster et al., 2013), the finding that this is a motivating factor to continue ongoing participation was a unique perspective provided by this study.

Additional Findings

This study was successful in identifying themes that answered the research questions. Additionally, this study also identified the unexpected theme that both old and new occupations, including boxing, were valuable to individuals with PD. There is a vast amount of literature within the discipline of occupational science that supports the value that occupation plays within a variety of contexts and populations (Pierce, 2014) that is in agreement with this study. For example, Pollanen (2013) found that the occupation of crafting was perceived as valuable within the population of textile makers. Argentzell, Hakansson, and Eklund (2012) found that all types of occupations held value for adults with mental illness. Murdock, Cousins, and Kernohan (2014) found that work was an important occupation for adults with PD. Occupations within the physical, psychological, social, and spiritual context have all been identified as areas of particular value to individuals with PD due to the restrictions that the disease places on their ability to engage in occupations (Murdock, Cousins, & Kernohan, 2014). Clearly, the research indicates that meaningful occupations hold value in the lives of people and this is true of non-contact boxing for people with PD.

The connection between valuable occupation and social and community engagement is less obvious, but it is present. A study by Combs and colleagues (2013)

found that participation in non-contact boxing led to improved quality of life scores for individuals with PD. Another study found that decreased participation in activities led to lower health-related quality of life (Conner, Wolf, Foster, Hildebrand, & Baum, 2014). Dauwerse and colleagues (2014) and Engstrom and Nordeson (1995) found that social participation was a significant factor in how individuals with PD and other neurological diseases perceived their quality of life. This connection was also demonstrated in Rodrigues de Paula and colleagues' (2006) study that physical exercise improves quality of life scores specifically in the area of social interaction for individuals with PD. Therefore, occupations that include social components are a valuable aspect of the lives of those who participate in those occupations. This study supported this by finding that factors contributing to quality of life are reasons that individuals with PD give importance to occupations and continue to participate.

Connection to Theory

This study utilized the Model of Human Occupation (MOHO) as the foundational theory for the development of the study. In this model, the three human components (volition, habituation, and performance capacity) in partnership with the environment motivate occupational engagement (Kielhofner, 2008). The findings of this study illustrated concrete application of this theory. Throughout the findings of this study, all of the components were discussed in a manner that demonstrated how they were intertwined and impacted occupation simultaneously. For example, the physical capacity component was identified in the finding that non-contact boxing provided physical, cognitive, and emotional benefits to individuals with PD. These physical benefits were found to inform the volitional component as it was a primary motivating factor for continued participation

in boxing. The motivation to continue to participate in boxing, impacts the routine of weekly boxing class attendance. All of these factors are influenced by the social environment that the boxing class provided and the desire of the study participants to be physically capable of fully engaging in their environment. It is difficult to discuss one of these findings without acknowledging its relationship to the other results. This was clearly evident in the description of non-contact boxing provided by the study participants.

While there is no other research that analyzed boxing and PD from this perspective, there is literature that examined the relationship between dancing and PD which produced similar results. As with boxing, the Argentine Tango also provided performance capacity benefits to adults with PD (Duncan & Earhart, 2012). Participation in the shared occupation of the Argentine Tango also increased individual's motivation to continue with dancing and increased their participation in other chosen activities (Foster et al., 2013). Results from both studies demonstrated how the occupation of dancing impacted an individual with PD's ability to engage more fully in their environment (Duncan & Earhart, 2012; Foster et al., 2013). Additionally, a 13 article literature review on the evidence surrounding dancing and PD supported these findings (Shanahan, Morris, Bhriain, Saunders, & Clifford, 2015).

In regards to the components that are identified in MOHO, Kiehlhofner (2008) states "it is always the summation of their total contributions to the dynamic whole that results in the outcome" (p. 26). The evidence surrounding boxing and dancing alike, demonstrated that participation in shared physical occupations does not provide just a singular impact on individuals with PD. Each component, as described by MOHO, are

working together in a circular relationship to influence occupation. This is vitally important to occupational therapy because it provided evidence that supports viewing occupation through a multidimensional lens.

Strengths and Limitations

This study had several strengths that assisted in supporting the validity of the findings. The study had a strong sample size for a qualitative study with no participants dropping out of the study. The subjects were extremely open and candid during their interviews, providing the researcher with a large amount of rich data to analyze. The study was completed by one primary researcher, leading to consistency between interviews and a strong familiarity with the data. The researcher also implemented various strategies throughout the study to increase the trustworthiness of the outcomes including having a mentor that was skilled in qualitative data analysis review the data and outcomes, having a sample of the subjects review the outcomes to ensure they were representative of their perceptions, the use of an audit trail, and the use of a reflexivity journal.

There were also some limitations during the implementation of the study that should be discussed. The study was designed with inclusionary criteria to allow individuals who were no longer participating in boxing, but had participated within the past year. The researcher was unable to recruit any individuals who were no longer participating in boxing. Since all study subjects were current boxing participants it narrowed the point of view the researcher was able to obtain. Another limitation may have been the influence of the researcher's personal biases. For example, it is not unexpected that an occupational therapist would find that occupations are important in

individuals with PD in her study. However, the researcher was aware of the potential influence of personal bias and took steps to mitigate those biases as identified in the discussion regarding the trustworthiness of the study.

Additionally, the researcher did have an expectation that the study subjects would view boxing positively. This bias became prevalent when designing interview questions and when needing to provide clarification to questions during implementation of the interviews. At times, it was difficult for the researcher to refrain from using positive language that have guided the subject's responses. A reflexivity journal was utilized throughout the study process that allowed the researcher to identify her own biases, increase awareness of those biases, and set them aside as much as possible. Engaging in discussion with a peer mentor was also a technique the researcher used to bracket biases throughout the study.

Implications for Practice

Occupational therapy clinicians recognize the value that occupations play in the lives of our clients and acknowledge the ability of occupation to serve as a therapeutic modality (Trombly, 1995). This study demonstrated the need for occupational therapists to fully understand occupation and the role that occupation plays in the lives of their clients. It is also necessary for occupational therapists to understand a variety of occupations, such as boxing, in order to understand the potential use of these occupations in practice. When there is an increase in available evidence - such as this study - surrounding the importance of occupation in the lives of adults with disabilities, it helps to ensure that funding continues to be available and potentially expanded for future occupational therapy services.

Occupational therapists frequently provide services for individuals with PD. These clinicians are responsible for providing interventions and education to assist their clients in returning to and maintaining their highest level of independence. Occupational therapists should be aware that individuals with PD have decreased participation in occupations that impact their quality of life (Connor et al., 2014). "Of particular concern is the apparent vulnerability of social activities to the onset of PD" (Connor et al., 2014, p. 112). This study found that non-contact boxing provides a variety of benefits, including fostering relationships, to individuals with PD. Occupational therapists should recommend non-contact boxing as a potential intervention for individuals with PD to maintain their highest level of function and enhance their social and community engagement.

The researcher realizes that participation in a non-contact boxing class may not be a realistic intervention for occupational therapists to provide in some settings. However, the role of an occupational therapist goes beyond providing direct, short-term interventions. A portion of AOTA's (2017) 2025 vision encourages clinicians to identify "effective solutions that facilitate participation in everyday living" (p. 1). Occupational therapists are responsible for ensuring that their clients have the necessary resources to maintain their highest level of function once they are no longer able to access therapy services. Non-contact boxing is a feasible recommendation for occupational therapists to make to their clients with PD in order for them to manage their symptomology while living in the community.

Both AOTA's (2007) centennial vision and AOTA's (2017) 2025 vision identify the profession's desire to become leaders in addressing the health and wellness needs of

community populations. In response to these statements, academic institutions will need to rise to the challenge of educating future clinicians on ways to address these needs within their communities. Making students aware of potential community resources, such as non-contact boxing programs, and educating them on appropriate times to recommend these resources to their clients is necessary in order for occupational therapy to move in its desired direction.

Future Research

This research study has concluded that occupations are important for individuals with PD with a specific focus on the occupation of non-contact boxing. The convenience sample for this study utilized individuals that were already actively participating in a variety of occupations that they had sought out independently. Future research would be beneficial utilizing a sample of individuals that are not participating a variety of community based activities (ie: individuals with PD that are homebound or hospitalized) to determine whether they place similar importance on occupations and to determine which occupations they consider valuable.

It would also be beneficial to complete this study with caregivers of individuals with PD in order to examine their views on meaningful occupations. Since this study focused on the occupation of boxing and determined that individuals with PD perceive boxing to provide a variety of benefits, it would be interesting to identify whether caregivers had similar perceptions. This line of research would potentially provide more support for the use of non-contact boxing as an intervention and possibly an avenue for caregiver respite.

Future research should also examine the impact of non-contact boxing on individuals with different diagnosis, specifically other neurological diagnosis. This would provide knowledge on whether the benefits of boxing could be generalized to other population and, in turn, be utilized more frequently during therapeutic interventions.

Finally, the results of this study suggest that engagement in a physical occupation may increase participation in social occupations. Foster and colleagues (2013) made this conclusion when examining participating in the Argentine Tango for individuals with PD. It would be interesting to examine this relationship more specifically, in regards to boxing, to determine if findings remain consistent across different physical occupations for the same population.

Summary

"In order for practice to be effective in applying occupation to improve lives, we need to understand how it is experienced and perceived by our clients, how it is shaped by other factors, how it develops, and how it is best used to make change" (Pierce, 2014, p. 2). This study helps to inform the discipline of occupational science by increasing an understanding of the subjective experiences of individuals with PD who participate in non-contact boxing.

This study helped to confirm prior research that non-contact boxing provides a variety of benefits to individuals with PD and is a feasible intervention to assist with PD symptom management. This study was unique in the sense that it is the only study that specifically examined the perceived social and community implications of boxing. This study found that occupations, including boxing, bring people together to facilitate the

growth of supportive relationships. Therefore, non-contact boxing does have the potential to positively impact the social engagement of individuals with PD.

The research questions and associated findings enhanced the understanding of the connection between occupation and social engagement. This study supported previous findings that shared occupations facilitate supportive relationships. The study also found that the concept of social connectedness was a motivating factor for ongoing participation in boxing and other valuable occupations. This is important information when working with populations that are at risk for occupational injustice through social isolation, such as individuals with PD.

Additionally, this study unexpectedly highlighted the important role that all valued occupations play in the lives of individuals with PD. Occupations, both new and old, were perceived as valuable to individuals with PD. Importance may be placed on occupation for a variety of different reasons, but ultimately the outcome is the same – occupation is meaningful and so people continue to seek out and participate in preferred occupations.

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NOTICE OF IRB APPROVAL

Protocol Number: 000917

Institutional Review Board IRB00002836, DHHS FWA00003332

Review Type: ☐Full ☒Expedited

Approval Type: ☒New ☐Extension of Time ☐Revision ☐Continuing Review

Principal Investigator: **Casey Humphrey** Faculty Advisor: **Dr. Melba Custer**

Project Title: **Perceptions of the Impact of Non-contact Boxing on Social and Community Engagement for Individuals with Parkinson's disease**

Approval Date: **7/12/17** Expiration Date: **1/1/18**

Approved by: **Dr. Ida Slusher, IRB Chair**

This document confirms that the Institutional Review Board (IRB) has approved the above referenced research project as outlined in the application submitted for IRB review with an immediate effective date.

Principal Investigator Responsibilities: It is the responsibility of the principal investigator to ensure that all investigators and staff associated with this study meet the training requirements for conducting research involving human subjects, follow the approved protocol, use only the approved forms, keep appropriate research records, and comply with applicable University policies and state and federal regulations.

Consent Forms: All subjects must receive a copy of the consent form as approved with the EKU IRB approval stamp. You may access your stamped consent forms by logging into your InfoReady Review account and selecting your approved application. Copies of the signed consent forms must be kept on file unless a waiver has been granted by the IRB.

Adverse Events: Any adverse or unexpected events that occur in conjunction with this study must be reported to the IRB within ten calendar days of the occurrence.

Research Records: Accurate and detailed research records must be maintained for a minimum of three years following the completion of the research and are subject to audit.

Changes to Approved Research Protocol: If changes to the approved research protocol become necessary, a description of those changes must be submitted for IRB review and approval prior to implementation. Some changes may be approved by expedited review while others may require full IRB review. Changes include, but are not limited to, those involving study personnel, consent forms, subjects, and procedures.

Annual IRB Continuing Review: This approval is valid through the expiration date noted above and is subject to continuing IRB review on an annual basis for as long as the study is active. It is the responsibility of the principal investigator to submit the annual continuing review request and receive approval prior to the anniversary date of the approval. Continuing reviews may be used to continue a project for up to three years from the original approval date, after which time a new application must be filed for IRB review and approval.

Final Report: Within 30 days from the expiration of the project, a final report must be filed with the IRB. A copy of the research results or an abstract from a resulting publication or presentation must be attached. If copies of significant new findings are provided to the research subjects, a copy must be also be provided to the IRB with the final report. Please log in to your InfoReady Review account, access your approved application, and click the option to submit a final report.

Other Provisions of Approval, if applicable: None

Please contact Sponsored Programs at 859-622-3636 or send email to lisa.royalty@eku.edu with questions about this approval or reporting requirements.