INTENTION TO TEACH PHYSICALLY ACTIVE ADAPTED PHYSICAL EDUCATION CLASSES TO CHILDREN AND YOUTH

A DISSERTATION

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

IN THE GRADUATE SCHOOL OF THE

TEXAS WOMAN'S UNIVERSITY

DEPARTMENT OF KINESIOLOGY

COLLEGE OF HEALTH SCIENCE

BY

JAEHWA KIM B.A., M.S.

DENTON, TEXAS

MAY 2015

TEXAS WOMAN'S UNIVERSITY
DENTON, TEXAS

March 6, 2015

To the Dean of the Graduate School:

I am submitting herewith a dissertation written by Jaehwa Kim entitled "Intention to Teach Physically Active Adapted Physical Education Classes to Children and Youth." I have examined this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy with a major in Kinesiology.

Ron French

Ron French, Ed.D., Major Professor

We have read this dissertation and recommend its acceptance:

Young Hoon Kim, Ph.D.

Lisa Rosen, Ph.D.

Barney Sanborn

Charlotte (Barney) Sanborn, Ph.D.

Lisa Silliman-French, Ph.D.

Barney Sanborn

Department Chair

Accepted:

Dean of the Graduate School

DEDICATION

For my parents, Myungjo Kim and Seungyul Lee, my fiancé, Eunyoung Chang, and my American parents, Drs. Ron French and Lisa Silliman-French,

thank you for your never ending patience and love.

ACKNOWLEDGMENTS

I would like to gratefully acknowledge the many individuals who help me complete this dissertation. I would like to thank my dissertation committee members, Dr. Sanborn, Dr. Rosen, and Dr. Kim. I am very grateful for each of your unique areas of expertise and I truly appreciate the time, energy, and effort you have put into this project. To Dr. Sanborn, thank you for supporting and giving feedback. To Dr. Rosen, thank you for your time meeting with me and giving advices related to statistics. To Dr. Kim, thank you so much for your time, patience, and guidance while I strive to be a novice researcher. What a blessing it has been to have such wonderful role models.

I would like to express a special thanks to my chair, Dr. Ron French, and my committee member, Dr. Silliman-French. I would not have been able to complete my dissertation without your help and guidance. I have learned a lot from you, Dr. French and Dr. Silliman (also all of my committee members) to become a better scholar and a better teacher. However, what I have learned from you most is how to give a student endless and true love. Without your love, I would not have been able to become a (better) person first before becoming a scholar and a teacher. I feel very ashamed of myself for what I did to you in the past, especially how I behaved (reacted) like a baby when I, as an international student, had difficulties living and studying in the United States. I also feel ashamed for not realizing your true and constant love. Always you believed in me and understand me. Nothing but your only true love changes me to be a better person.

My only hope is how I can pay back to you somehow. One of ways to pay back will be never forget and spread your love to other people. Now I am ready and confident to succeed you, Dr. French and Dr. Silliman, to inspire people. I also strongly believe it is not impossible. I was just a very ordinary person but you make me a true person who has become to believe everything is possible. Once again thank you thank you Dr. French and Silliman. Lastly, I never said to you but now I have to say ‘I love you, Dr. French and Dr. Silliman.’

ABSTRACT

JAEHWA KIM

INTENTION TO TEACH PHYSICALLY ACTIVE ADAPTED PHYSICAL EDUCATION CLASSES TO CHILDREN AND YOUTH

MAY 2015

The purposes of the present investigation were: (a) to examine whether adapted physical educators' intentions of teaching moderate to vigorous physical activity (MVPA) at least 50% of their class time with students with disabilities were determined by attitude toward, subjective norms of, perceived behavioral control, based on the theory of planned behavior; and (b) to determine cognitive foundation of the intentions of adapted physical educators. The participants were 122 purposely selected adapted physical educators primarily from California, Texas, and New York. A modified version of the *Physical Educators' Intention Toward Teaching Individuals With Disabilities-II* (PEITID-II; Rizzo, So, & Tripp, 2007) questionnaire was used to assess adapted physical educators' intentions, attitudes, subjective norms, perceived behavioral control, behavioral beliefs, normative beliefs, and control beliefs. A path analysis and Pearson correlation analyses were performed to analyze the data using SPSS 19.0.

Based on the results, the adapted physical educators' intentions were significantly affected by their attitudes, subjective norms (i.e., social expectation), and perceived behavioral control (i.e., confidence) with the positive relationships. Based on the cognitive foundation of the intentions, the adapted physical educators who believed in

positive consequences were likely to intend to teach MVPA at least 50% of their class time with students with disabilities. Further, administrators, parents/guardians, and medical personnel were significant individuals that the adapted physical educators felt to need to meet their expectations of teaching MVPA. On the other hands, the students' physical and cognitive limitations were considered a barrier to the adapted physical educators when teaching MVPA.

Within the limitations of the study, the conclusions were drawn that the findings in the present study supported the theory of planned behavior was applicable to provide insight into the relationships of attitudes, social expectation, and a sense of control with the intentions of adapted physical educators to teach MVPA at least 50% of their time. More importantly, their strong intentions at least met the national recommendation of physical education (i.e., minimum 50% of class time should be moderate to vigorous to students in their physical education) according to *Healthy People 2020* (U.S. Department of Health & Human Services, 2010).

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

INTRODUCTION

Understanding adapted physical educators' behaviors may lead to important professional development information for future and current adapted physical educators. It is critical to know why behavior of adapted physical educators changes or performs in order to develop and design effective interventions such as teaching physically active classes with students with disabilities (Martin, Kulinna, Eklund, & Reed, 2001). Many experts in the field have strongly suggested that professional development training should be provided to help physical educators to professionally and continuously learn knowledge and skills to teach students with disabilities in schools (Bowers, 2009; Jorda, Glen, & McGhie-Richmond, 2010; Slepkov, 2008; Sideridis, Antonious, & Padeliadu, 2008; Waugh, 2010).

The prevalence of childhood obesity in the United States has tripled over the past three decades (Toh, Cutter, & Chew, 2002). It has been reported that approximately 12.5 million children and adolescents, aged 2 through 19 years are obese (Ogden, Carroll, Curtin, Lamb, & Flegal, 2010; Ogden, Carroll, Kit, & Flegal, 2012). Further, childhood obesity is a serious public health concern which has numerous adverse effects; for instance, high cholesterol, hypertension, respiratory ailments, orthopedic problems, depression, and Type 2 diabetes (Centers for Disease Control and Prevention [CDC], 2004). Because of the negative health effects, the direct medical cost associated with

childhood obesity has been estimated to be at $3 billion per year (Trasande & Chatterjee, 2009).

Obesity prevalence is even higher in students with disabilities than students without disabilities (Bandini, Curtin, Hamad, Tybor, & Must, 2005; Chen, Kim, Houtrow, & Newacheck, 2010; Ells et al., 2006). According to CDC (2006), obesity rates among children with disabilities are 38% higher than those without disabilities. This is because children who are disabled are less likely to eat healthy, manage their weight, and live a physically active lifestyle (Heath & Fentem, 1997; Longmuir & Bar-Or, 2000; Rimmer, Rubin, Braddock, & Hedman, 1999; Schreck, Williams, & Smith, 2004).

Physical activity is an integral component of childhood obesity prevention (U.S. Department of Health and Human Services [HHS], 2008). The need for promoting physical activity with students with disabilities who are at great risk for obesity is urgently essential (Rimmer, Rowland, &Yamaki, 2007). Adapted and general physical educators, who play an important role in motivating and encouraging students with disabilities to be physically active, are vital to 'battle' this epidemic health issue (Hallawell, Stephens, & Charnock, 2012).

According to theory of planned behavior (Fishbein & Ajzen, 1975), adapted physical educators who have *a strong intention* of teaching physically active classes are highly likely to teach physically active classes in the future. It has also been stated that a person's intention to perform a behavior is an immediate preceding stage of his or her actual performance of the behavior (Fishbein & Ajzen). Many researchers have provided

evidence that the intentions of general physical educators and physical activity instructors was a significant predictor of the behavior and accounted for 2.4% to 51% of the variance of the behaviors such as: implementing the fitness tests (Stewart-Stanec, 2009); teaching students with disabilities in inclusive physical education settings (Conatser, Block, & Gansneder, 2002; Jeong & Block, 2011); performing exercise (Marsh, Papaioannou, & Theodorakis, 2006); and teaching physically active physical education classes (Martin & Kulinna, 2005). Further, physically active adapted physical education programs provide opportunities with students with disabilities to increase their overall physical fitness levels.

However, using the theory of planned behavior, most often only one key determinant (i.e., attitude toward behavior) of general physical educators has been used to understand their teaching behavior and develop interventions with students with disabilities. Seldom though have other key determinants of intention (i.e., subjective norm, perceived behavioral control) been included (e.g., Kozub & Lienert, 2003). Further, the focus of past researchers has been on the intention of teaching students with disabilities in inclusive general or adapted physical education environment (e.g., Block & Rizzo, 1995; Doll-Tepper, von Selzman, & Lienert, 1992; Folsom-Meek & Rizzo, 2002; Rizzo, 1984). No study could be located with a focus on the intentions of adapted physical educators teaching moderate to vigorous physical activity with students with disabilities.

In addition, it was suggested that much more research is needed to develop a strong body of evidence in adapted physical education related to social psychology on the behaviors of adapted physical educators (Kozub & Lienert, 2003). With the limited evidence, it is difficult to generalize from the findings of the previous research and assume that the psychological constructs (i.e., attitude toward behavior, subjective norm, perceived behavioral control) influence adapted physical educators' intentions or behaviors (Ajzen & Fishbein, 1980). The present study may contribute to accumulating evidence related to the present study topic (i.e., theory of planned behavior, physical activity) in the field of adapted physical education.

Physical Activity

Physical activity is defined as ". . . bodily movement that improve health" or ". . . any bodily movement produced by the contraction of skeletal muscle that increases energy expenditure above a basal level" (HHS, 2008, p. 2). It is well documented that the benefits of physical activity are evident in the physical (e.g., cardiovascular endurance, muscle strength, motor skills, body weight); psychological (e.g., depression, anxiety); and social (e.g., self-confidence, social interaction) domains for children with and without disabilities (Darrah, Wessel, Nearingburg, & O'Conner, 1999; Davis, Zhang, & Hodson, 2011; Fragala-Pinkham, Haley, & Goodgold, 2006; Ozmen, Yildirim, Yuktasir, & Beets, 2007; Ulrich, Burghardt, Lloyd, Tiernan, & Hornyak, 2011). These benefits, in turn, lead children to healthier and better quality of lives. However, specifically related to body fat reduction among children with disabilities, although physical activity decreases weight of

a child, some experts have also reported that physical activity intervention had weak or modest effects on the reduction of body fat in children with disabilities (Davis et al.; Ozmen et al.).

The physical activity benefits are universal with students with and without disabilities. The large body of evidence have supported that physical activity has positive effects on children who are nondisabled (HHS, 2008). However, there is a relatively little evidence on the effectiveness of physical activity for children with disabilities (Golubovic, Maksimovic, Golubovic, & Glumbic, 2012; Rimmer & Rowland, 2008).

In the national guidelines for physical activity (HHS, 2008), children and youth 5 to 17 years of age should spend at least 60 min per day participating in Moderate to Vigorous Physical Activity (MVPA). Further, the 60-min daily MVPA comprises three types of activities: aerobic, muscle strengthening, and bone strengthening (HHS).

First, aerobic physical activity is a physical activity that makes children move rhythmically using their large muscles such as running, swimming, or dancing. It is recommended that children should spend either moderate or vigorous aerobic physical activity each day for most of 60 min; and at least 3 days a week vigorous aerobic physical activity. Second, a muscle strengthening activity is defined as physical activity that makes muscles work or resist against weight or a force. This activity can be structured, for example, push-ups and sit-ups; or unstructured, for example, climbing trees and playing on the playground. Muscle-strengthening activity is recommended at least 3 days a week as part of the 60-min workout. Third, a bone strengthening activity involves

increasing bones growth and strength through a force generally produced by impacting body parts with the ground. Examples of the activity could be running, jumping rope, or basketball. A physical activity that impacts the skeleton is strongly recommended at least 3 days a week for children and youth because of the positive effects on childhood bone development.

Physical Activity Levels of Children and Youth With Disabilities

Unfortunately, children and youth with disabilities who are at great risk for obesity are more likely to have lower physical activity levels compared to the general population (Rimmer & Rowland, 2008). Numerous investigators have reported that children and youth with physical disabilities, cerebral palsy, and intellectual disabilities were lower in physical activity levels compared to able bodied children (Hinckson & Curtis, 2013; Steele et al., 1996; Zwier et al., 2010). Children and youth with physical disabilities were less likely to commit to exercise on the regular basis (39% never exercised) than those without disabilities and their physical inactivity was 4.5 times higher than their nondisabled peers. Children with disabilities were engaged in approximately 200 min per week of physical activity which was significantly lower than their peers without disabilities (348 min per week). This was particularly true for children with intellectual disabilities (Hinckson & Curtis).

General Physical Education

Many professionals have suggested that school-based physical education programs are considered a logical, ideal, and effective place to promote physical activity

in relation to obesity among students (Cothran, McCaughtry, Kulinna, & Martin, 2006; HHS, 2000). More than 43 states in the United States have mandated physical education for elementary school students; 40 states have mandated physical education for middle/junior high school students; and 46 have mandated physical education for high school students (National Association for Sport and Physical Education & American Heart Association [NASPE & AHA], 2010). Additionally, there is evidence of physical education programs having positive physical effects on students in school (Task Force on Community Preventive Services, 2005). Specifically, it has been suggested that physical education programs in school were effective in enhancing the physical activity level and the physical fitness, and managing the body weight among students (Alderman, Benham-Deal, Beighle, Erwin, & Olson, 2012).

However, general physical education programs may not be an ideal place when it comes to increasing participation in physical activity among students with disabilities. Students with disabilities face physical, programmatic, and psychological challenges to participate in general physical education in school (Rimmer & Rowland, 2008). General physical education teachers may limit opportunities with students with disabilities to participate in physical activity within the physical education classes because the classes could be designed toward competition and students who are nondisabled are many times unwilling to include students with disabilities on their teams (Dunn & Leitschuh, 2009; Murphy & Carbone, 2008). Students with disabilities may also expend less energy than their peers without disabilities during the physical education classes because there may be

various barriers associated with participation. These barriers could be inaccessible facilities, lack of teachers' knowledge to modify programs for the student, and lack of interest among the administration in addressing access issue that interfere with physical activity participation with students with disabilities (Dunn & Leitschuh; Murphy & Carbone).

Adapted Physical Education

For students with disabilities to have an equal opportunity of a high quality physical education, the Individuals With Disabilities Education Act (IDEA) of 2004 mandates that all students with disabilities aged 3 through 21years must be, if appropriate, provided a high quality physical education program in the least restrictive environment at no cost. Students who are identified under one of the 13 disabilities in IDEA are provided an Individual Education Program (IEP); which may include adapted physical education.

Adapted physical education is provided to students with disabilities as part of their special education program because physical education is the only curricular area identified in the definition of special education in IDEA (2004). The definition of adapted physical education is similar to general physical education. It is the development of: (a) physical and motor fitness; (b) fundamental motor skills and patterns; and (c) skills in aquatics, dance, and individual and group games and sports including intramural and lifetime sports which is also consistent with that of general physical education with students without disabilities. As part of physical education and special education, adapted physical education is further described as the ". . . art and science of developing,

implementing, and monitoring a carefully designed physical education instructional program for a learner with a disability based on a comprehensive assessment to give the learner the skills necessary for a lifetime of rich leisure, recreation, and sport experiences to enhance physical fitness and wellness" (Auxter, Pyfer, Zittel, & Roth, 2010, p. 8).

National Guidelines for Physical Education

In the United States, there are national physical education guidelines recommended for children and youth in schools. According to *Healthy People 2020* (HHS, 2010), for childhood obesity, HHS and CDC recommended that at least 50% of class time should be moderate to vigorous and enjoyable to students in physical education. In addition, it is recommended in the National Association for Sport and Physical Education (NASPE, 2009) that daily physical education should provide moderate to vigorous physical activity for 150 min per week in elementary schools and 225 min per week in secondary schools.

However, in reality, moderate to vigorous physical activity (MVPA) time in physical education is insufficient and considerably lower than that is recommended by national health objectives (i.e., 50% of physical education time, 150 min per week in elementary school level, 225 min per week in secondary school level; Nader, 2003; Simons-Morton et al., 1994; University of California at Los Angeles [UCLA] Center, 2007). In addition, it has been suggested that traditional physical education curricula are less likely to focus on the development of physical fitness, health, or well-being in students, when compared to sports skills and competition (Li, Rukavina, Sutherland,

Shen, & Insook, 2012). For instance, Prusak et al. (2011) stated that ". . . we have to face this reality: physical education, in its most common forms, is simply not designed to address healthy and active lifestyle management issues such as obesity" (p. 41). Although physical education professionals believe that the traditional physical education curriculum (i.e., sports skill and competition focused) leads children and youth to be physically active for a lifetime and prevents obesity in childhood and adulthood (Cameron et al., 2011; Prusak et al., 2011). Numerous researchers who have conducted longitudinal studies have reported that there was no or weak correlation between the motor skills learned in childhood and level of the physical activity patterns and physical health in adulthood (Kemper, 1995; Pate, Baranowski, Dowda, & Trost, 1996; Shephard & Trudeau, 2000).

This is also true for adapted physical educators. They may not focus on teaching physically active classes to students with disabilities in order to enhance physical fitness levels of the students. Based on the results of a qualitative study by Akuffo and Hodge (2008), adapted physical educators believed that teaching fundamental motor skills were an essential goal of their instruction; however, they did not mention the development of physical fitness levels of students with disabilities. In a quantitative study by Sherrill and Montelione (1990), adapted physical educators reported that physical fitness of students with disabilities as an instructional goal was not as important as motor skill, self-concept, and perceptual motor function and sensory integration.

Adapted physical educators should follow the national guidelines with students with disabilities. It was suggested that these guidelines regarding physical activity levels during physical education must be addressed with students with disabilities and their physical fitness needs should be met by implementing quality adapted physical education classes within a school system (NASPE, 2009; Pan & Frey, 2006).

Teaching Physically Active Adapted Physical Education Classes

It is clear that physical fitness, health, and well-being of students with disabilities who are at the greatest risk to obesity, should be emphasized and promoted in adapted physical education. Adapted physical educators play an important role in promoting students with disabilities to be physically active (Zhang, Solmon, & Gu, 2012). Adapted physical education is a specially designed physical education that can possibly increase physical activity level, promote physical fitness, and prevent or manage obesity among students with disabilities within a school system (Rimmer et al., 2007). One approach to increase physical activity in adapted physical education is to teach physically active classes (i.e., it is recommended that 50% of the class time should be dedicated to be moderate to vigorous physically active; HHS, 2010). Teaching physically active adapted physical education classes does not specifically address the obesity issue of students with disabilities but meet the national standards for students as part of obesity prevention and intervention.

Adapted physical educators teaching physically active classes will be an important step to enhance the levels of physical fitness, including body fat reduction, of

students with disabilities. It has been suggested that teachers (i.e., adapted physical educators) are a key determinant of students' engagement in physical activity (Martin et al., 2001). Students with disabilities who participate in physical activity are more likely than those who do not participate in physical activity to improve their levels of physical fitness. It has been well documented that physical activity has many physical benefits such as increased cardiovascular endurance, increased muscular endurance and strength, flexibility, and body fat reduction (e.g., Davis, Zhang, & Hodson, 2011; Fragala-Pinkham, Haley, & Goodgold, 2006). Because of the strong relationship between the intention and the actual behavior of teachers, as well as, the strong cause-and-effect between the physical activity and the improved physical fitness levels in students with disabilities, determining the intentions of adapted physical educators to teach physically active classes is logically appropriate and fundamental to understand their behavior of teaching physically active classes and eventually improve the levels of physical fitness in students with disabilities.

Framework of the Study

One of the prominent theories that can be used to understand human behavior is the theory of planned behavior (Ajzen, 1985). The theory of planned behavior is a theoretical framework that is designed to predict a specific behavior (i.e., teaching physically active classes) in individuals (i.e., adapted physical educators) in a specific context (prevention or intervention of obesity among students with disabilities). The theory of planned behavior is expanded from theory of reasoned action in which human

behavior is directly associated with or predicted by one's intention (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975).

Theory of Reasoned Action

According to theory of reasoned action, behavior is solely predicted by intention, and the intention is determined by attitude toward behavior and subjective norm or social expectation (Fishbein & Ajzen, 1975). Attitude toward behavior refers to the evaluation of whether an individual is in favor or disfavor of performing the behavior. Subjective norms refer to an individual's perceptions of social influence to perform or not perform a behavior. In general, if adapted physical educators have a positive attitude about teaching physically active classes with students with disabilities (i.e., behavior) and their social groups or society are favorable to their behavior, then they will have high behavioral intention and, in turn, actually teach physically active classes with students with disabilities.

However, this psychological process has limitations in explaining behavior. In reality, action is rarely taken by one's free will but can be measured by how difficult or easy it is to perform the behavior (Ajzen, 1985). The prediction is accurate when it is assumed that individuals have adequate control over the behavior (i.e., volitional control; Bentler & Speckart, 1979).

Theory of Planned Behavior

Theory of planned behavior incorporates a construct of perceived control of behavior (i.e., volitional control) in addition to the constructs of theory of reasoned action

(i.e., attitude toward behavior and subjective norm; see Figure 1). In theory of planned behavior, there are three key predictors of intentions: (a) attitude toward behavior, (b) subjective norms, and (c) perceived behavioral control.

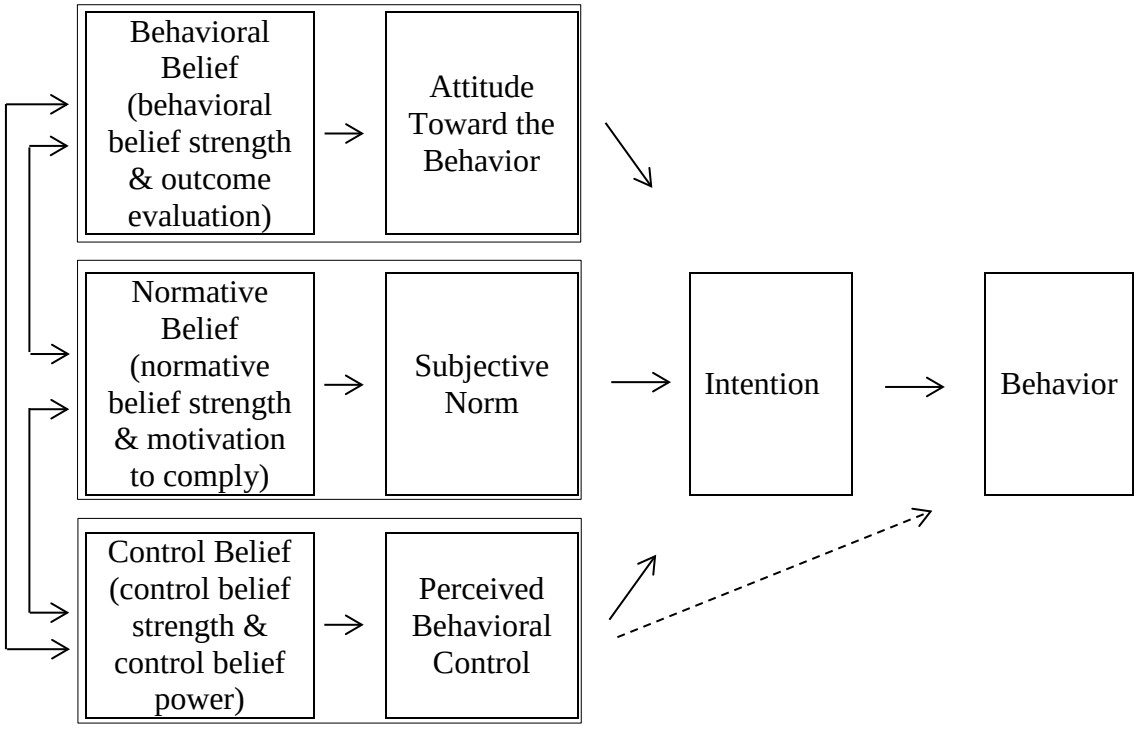

Figure 1. Diagram of Theory of Planned Behavior. Modified From Ajzen and Fishbein (1980).

Attitude toward behavior refers to the evaluation of whether an individual is in favor or disfavor of performing a behavior. Subjective norms refer to an individual's perceptions of social expectation to perform or not perform a behavior. Perceived behavioral control refers to an individual's perceptions of the ease or difficulty to engage a behavior. These predictors can be directly measured and used to predict an individual's intention to perform a behavior.

Further, these predictors have an underlying foundation. According to theory of planned behavior, it is assumed that each predictor of attitude toward behavior, subjective norms, or perceived behavioral control is influenced by corresponding belief (Fishbein, 1967). Attitude toward behavior is determined by behavioral belief that consists specifically of two components: behavioral belief strength and outcome evaluation. Behavioral belief strength refers to an individual's belief about the probability of consequences of a behavior (e.g., I believe behavior A will likely or unlikely produce consequence B). Outcome evaluation refers to an individual's positive or negative evaluation of the consequences (e.g., consequence B of performing a behavior will be good or bad).

Subjective norm is determined by normative belief. Specifically, it has two components: normative belief strength and motivation to comply. Normative belief strength is related to an individual's belief about how others, who are important or significant to the individual, would think of the individual doing a behavior. Motivation to comply is the evaluation of whether an individual complies with his or her important people's expectation of the individual doing a behavior.

Perceived behavioral control is determined by the control belief which has two components: control belief strength and control belief power. Control belief strength is an individual's belief about the presence of factors (e.g., I agree or disagree that factor A will be present). Control belief power is individual's evaluation of whether perceived

factor will facilitate or inhibit the individual to perform a behavior (e.g., fact A will make it difficult or easy for me to perform a behavior).

Theory of planned behavior has been well established in many fields of study such as social psychology, advertising, public relations, and healthcare. In the fields of general and adapted physical education, theory of planned behavior was also tested and proven to demonstrate the relationship between the determinants (i.e., attitude toward behavior, subjective norm, perceived behavioral control) of intention and intention to perform behaviors among general physical educators (Martin et al., 2001; Richardson, Rosenthal, & Burak, 2012; Stewart-Stanec, 2009). However, the psychological process among adapted physical educators to demonstrate a given behavior is not well explained by theory of planned behavior. There is a need to identify how factors influence adapted physical educators' intentions to perform a behavior especially such as teaching physically active classes (i.e., 50% of the class time should be dedicated to be moderate to vigorous physically active) with students with disabilities (Rimmer et al., 2007).

Purpose of the Study

Therefore, the purposes of this study were to: (a) determine adapted physical educators’ opinions about the behavior of teaching 50% of the class time devoted to moderate to vigorous physical activity to students with disabilities for obesity prevention and intervention; (b) explore intention, attitude toward behavior, subjective norm, perceived behavioral control, control belief, behavioral belief, and normative belief of adapted physical educators with regard to teaching 50% of the class time devoted to

moderate to vigorous physical activity to students with disabilities for obesity prevention and intervention; (c) determine the relationships between intention, attitude toward behavior, subjective norm, perceived behavioral control, control belief, behavioral belief, and normative belief; and (d) determine if attitude toward behavior, subjective norm, perceived behavioral control, control belief, behavioral belief, and normative belief will be able to predict adapted physical educators' intentions to teach 50% of the class time devoted to moderate to vigorous physical activity to students with disabilities for obesity prevention and intervention.

Research Questions

For the purpose of the study, there are seven research questions that are as follows:

1. What are the salient behavioral beliefs, normative beliefs, and control beliefs regarding teaching 50% of the class time devoted to moderate to vigorous physical activity to students with disabilities?
2. What is the behavioral intention of adapted physical educators in regard to teaching 50% of their class time devoted to moderate to vigorous physical activity to students with disabilities?
3. What is the attitude, subjective norm, and perceived behavioral control of adapted physical educators in regard to teaching 50% of their class time devoted to moderate to vigorous physical activity to students with disabilities?

4. What is the behavioral control belief, normative belief, and control belief of adapted physical educators in regard to teaching 50% of their class time devoted to moderate to vigorous physical activity to students with disabilities?
5. Do behavioral intentions have predictive relationships with attitude, subjective norm, and perceived behavioral control?
6. Do behavioral belief, normative belief, and control belief determine attitude toward behavior, subjective norm, and perceived behavioral control.
7. What are the relationships of beliefs about individual outcomes of teaching 50% of the class time devoted to moderate to vigorous physical activity to students with disabilities with the behavioral intention?

Assumptions

The study was subject to the following assumptions:

1. Limited by the theory of planned behavior was an accurate reflection of relationship between the constructs (i.e., behavioral intention, attitude toward behavior, subjective norm, perceived behavioral control, behavioral belief, normative belief, control belief).
2. Limited by the definition of each construct.
3. Limited by its reliability and validity of the instrument which was determined by statistical analysis, experts, and focus groups.

4. Limited by the methods to address the problem and purpose of the study, as well as, by the statistical procedures and analyses to detect significant relationships between the constructs.
5. Limited by the assumption that the participants in the study represented the population, provide accurate responses, have similar understanding of a questionnaire between each other, and provide honest responses to the questionnaire statements.
6. Limited by the participants' ability to respond to the questionnaire (e.g., writing skills or concentration time), as well as, the measurement errors that were attributable to the instrument itself, the participant, or the environment.
7. Results of the proposed study were generalizable to adapted physical educators who are presently teaching students with disabilities adapted physical education in an elementary, middle, and/or high school in the United States.

Delimitations

The study was subject to the following delimitations:

1. Participant was included if they met following criteria: (a) an adapted physical educator; and (b) presently teaching students with disabilities adapted physical education in an elementary, middle, and/or high school in the United States.

2. Participants were recruited from members of Texas Association for Health, Physical Education, Recreation and Dance (TAHPERD), New York State Association for Health, Physical Education, Recreation, and Dance (NYS AHPERD), and National Consortium for Physical Education for Individuals With Disabilities (NCPEID).
3. Participants were recruited from Certified Adapted Physical Educators (CAPEs) who passed Adapted Physical Education National Standard (APENS) examination. The APENS examination is part of the NCPEID to provide CAPEs across the United States.
4. Adapted physical educator's intention, attitude toward behavior, subjective norm, perceived behavioral control, behavioral belief, normative belief, and control belief were examined only regarding teaching 50% of their class time devoted to moderate to vigorous physical activity.
5. Constructs were measured on a 7-point scale with an instrument designed specifically for the proposed investigation.
6. Only those questions and statements that were agreed by the panel of experts were included in the questionnaire.
7. Behavioral, normative, and control belief were identified through the elicitation survey; but the other constructs (i.e., attitude toward behavior, subjective norm, perceived behavioral belief) were not included in the elicitation survey.

8. Open ended question format was used to obtain as many valuable responses as possible during the elicitation survey.
9. Top 75% of accessible beliefs responses from elicitation survey were selected and converted into a set of statements as suggested by Ajzen (2006).
10. Graduate students who agreed to participate in content analysis met the following criteria: (a) had master's degree in Kinesiology with a specialization of Adapted Physical Education, (b) had taken at least one graduate course in teaching physical activity with students with disabilities, and (c) had at least 500 hours of field experience teaching students with disabilities in the public schools.
11. Content experts who involved the validation process of the questionnaire had expertise in childhood obesity, developing questionnaires based on theory of planned behavior, and more than 7 years' experience conducting research related to psychosocial questionnaires.
12. Field experts who participated in the questionnaire validation process had expertise in teaching students with disabilities in the field of adapted physical education.
13. Statistical procedures for developing the instrument, testing reliability and validity, and evaluating results were carried out according to the guidelines for the development of theory of planned behavior questionnaire (Ajzen, 2006; Field, 2009).

Definition of Terms

Adapted physical education: Adapted physical education is defined as the art and science of a specially designed physical education that involves various instructional services (e.g., one-on-one or small group instruction, consultation with general physical education, monitoring) to increase performance and learning of individuals with disabilities from birth to age 21 (Sherrill, 2004). The components of adapted physical education are consistent with that of general physical education in IDEA (2004).

Individuals With Disabilities Education Act (IDEA): This Act was initially enacted by Congress in 1975 to ensure that all students with disabilities receive a free appropriate public education in the least restrictive environment. The most recent amendment was passed by Congress in 2004. The law also states that special education including adapted physical education and related services (e.g., occupational therapy, physical therapy) involves specialized instruction designed to meet each student's unique needs and provided without charge. According to IDEA, there are circumstances which adapted physical education services are provided. First, adapted physical education services are provided only students with disability who are identified as eligible for special education under IDEA. Second, adapted physical education services are provided a student with disability from birth through 21 years of age. Third, all students with disabilities, when necessary, should be given opportunities to participate in the general physical education available to students without disabilities. Fourth, if students with disabilities can participate in general physical education without any special support, it is not necessary for them to be referred for adapted physical education services. Fifth, if

students with disabilities need adapted physical education services or some adaption to general physical education is necessary, it must be addressed in the Individual Education Program (IEP).

Moderate to vigorous physical activity: Intensity refers to the rate at which the activity is being performed. It can be thought of as ". . . how hard a person works to do the activity" (WHO, 2010, p. 16). Moderate physical activity refers to activities equivalent in intensity to brisk walking, bicycling, or household chores. Vigorous physical activity refers to activities that produce large increases in breathing and/or heart rate. Examples of vigorous physical activity include running, fast cycling, fast swimming, or moving heavy loads (CDC, 2008).

Overweight and obesity: Weight status can be identified by an individual’s Body Mass Index (BMI) or other measures of body composition (e.g., skinfold, ultrasound). In many cases, BMI (based on an individual's weight and height) is used to estimate an individual's body shape to determine whether he or she is overweight or obese. Children with a BMI between the 85th and 94th are considered overweight and those with the 95th percentile are considered obese (WHO, 1995).

Physical education: Physical education is defined as the development of: (a) physical and motor fitness; (b) fundamental motor skills and patterns; and (c) skills in aquatics, dance, individual and group games, and sports, including intramural and lifetime sports in IDEA (2004).

CHAPTER II

LITERATURE REVIEW

The purposes of the literature review were to: (a) gain and address an in-depth understanding of the topics related to this investigation; (b) support the relevance of the theoretical framework (i.e., theory of planned behavior); and (d) determine methodological techniques and designs that are appropriate for this study. Therefore, the literature review will focus on studies that address the following topics:

1. Overweight and Obesity in Children With Disabilities
2. Benefits of Physical Activity for Physical Fitness of Students With Disabilities
3. Physical Activity Levels of Children With and Without Disabilities
4. General Physical Education Programs With Students With Disabilities
5. Theory of Planned Behavior Applied in General Physical Education
6. Roles and Responsibilities of Adapted Physical Educators
7. Possible Influential Factors Related to the Teaching Behavior of Adapted Physical Educators

The literature review will be conducted by synthesizing, comparing, and contrasting the findings and identifying the methodological techniques and designs used in the literature. Further, the major studies presented in this investigation were evaluated using Strength of Recommendation Taxonomy (SORT; Ebell et al., 2004). The results of

the SORT (i.e., evaluations of studies) are provided in Appendix A which include information (e.g., authors, research design, characteristics of participants, intervention, instrument, the summary of findings).

The SORT is widely used in the medical field to assist practitioners and scholars to evaluate the levels of evidence and determine the strength of recommendation for clinical use. Evidence refers to individual studies or bodies of evidence from multiple studies and the levels of evidence are highly associated with types of research design and types of outcome (e.g., patient-oriented vs. disease-oriented outcome) and rated into three levels: Level 1 (highest quality), Level 2 (limited quality), or Level 3 (lowest quality).

For instance, meta-analyses and randomized-controlled trials (RCTs) which are designed to address the cause-and-effect relationship of an intervention for individuals to improve their quality of life (e.g., reduced mortality or reduced morbidity) are considered the highest quality evidence labeled as Level 1. Level 2 indicates the limited quality evidence between level1 and level 3. The examples of the level 2 are meta-analysis of lower quality clinical trial studies, a cohort study, a case-control study, and case series. Level 3, the lowest quality evidence, indicates evidence from expert opinion, consensus, and usual practice that produce intermediate, histopathology, physiologic, or surrogate results that may or may not be positive in individuals (e.g., blood sugar, blood pressure).

In addition, the strength of recommendation is graded as A (strongest strength), B (limited strength), or C (lowest strength), on the basis of the quality and consistency of evidence from individual studies. For instance, evidence from multiple studies (i.e., good

quality RCTs) is considered high quality and consistent between the most studies, then the strength of recommendation is assigned as A. The strength of recommendation B is referred as to evidence from multiple studies that are consistent but limited in the quality of the studies. The strength of recommendation C is referred to as evidence from multiple studies (i.e., consensus, expert opinion, usual practice) is considered low quality. Further, the strength of recommendation can be adjusted based on benefits, harms, and cost of the intervention that were examined in a study.

Overweight and Obesity in Children With Disabilities

The prevalence of overweight and obesity is higher in children with disabilities than children without disabilities in the United States (Child and Adolescent Health Measurement Initiative, 2010). There was a difference in the overweight rate between children with and without disabilities based on the results of a systematic review of 38 investigations (Reinehr et al., 2010, Level 2). In the systematic review, it was reported that the difference in the overweight rate between children with and without disabilities became evident as early as age of three years. The overweight rate of children with various disabilities (i.e., intellectual disabilities, learning disabilities, cerebral palsy, Down syndrome) was approximately twice as high as those of children without disabilities at this age. Further, based on the secondary analysis of the 2003 to 2008 National Health and Nutrition Examination Survey, it was reported that 22% of children with disabilities, aged 2 to 17 years, were obese while 16% of children without disabilities were obese (Centers for Disease Control and Prevention [CDC], 2014).

In addition, the overweight and obesity rates reported varied and were higher in children and youth with disabilities than the general population (Yamaki, Rimmer, Lowry, & Vogel, 2011). In a study by Pitetti, Yarmer, and Fernhall (2001, Level 2), it was reported that the Body Measure Index (BMI) of children and youth with intellectual disabilities had a greater tendency to be overweight than children and youth without disabilities. Further, in a study by Neter et al. (2011, Level 2), the BMI of 85 children with intellectual/physical disabilities and 4,072 children without disabilities were compared. It was noted that the overweight rate in children with intellectual/physical disabilities was three times higher than children without disabilities (30.6% vs. 9.9%) and the obesity rate was six time higher rate in children with intellectual/physical disabilities than in their counterpart (10.6% vs. 1.8%). In another comparative study by Dair, Ellis, and Lieberman (2006, Level 2), it was reported that the obesity rate among deaf children, aged 6 to 11 years, was 23.2% compared to the general population (16%). It was also true among children and youth with attention deficit/hyperactivity disorders (ADHD) and autism spectrum disorders (ASD) ages 3 to 18 years that the obesity rates were 17.3% and 19%, respectively (Curtin et al., 2005, Level 2). In addition being overweight and obese, it was more prevalent in female children and youth with learning disabilities than the general population (Bandini, Curtin, Hamad, Tybor, & Must, 2005, Level 2).

In summary, the obesity rate in children and youth with disabilities is more prevalent than the general population. Further, children with different disabilities had different obesity rates.

Benefits of Physical Activity for Physical Fitness of Students With Disabilities

Physical activity is an integral component in the development of an appropriate level of physical fitness including weight maintenance and reduction among children and youth with disabilities (Department of Health and Human Services [HHS], 2008). Physical activity is specifically defined as ". . . bodily movement that improve health" or ". . . any bodily movement produced by the contraction of skeletal muscle that increases energy expenditure above a basal level" (HHS, 2008, p. 2). However, there is limited evidence available related to the efficacy of physical activity interventions for children and youth with disabilities (Wu et al., 2010). Because of this, there is a need for researchers to examine the efficacy of physical activity interventions for children and youth with disabilities (Gillespie, 2003).

Based on a limited body of evidence, physical activity benefits identified for physical fitness of children and youth with disabilities are similar to their nondisabled peers. These physical activity benefits are: (a) improved muscular strength; (b) improved muscular endurance; (c) improved cardiovascular endurance; (d) improved flexibility; (e) improved agility; (f) improved balance; and (e) reduced BMI or body fat (Darrah, Wessel, Nearingburg, & O'Connor, 1999, Level 2; Davis, Zhang, & Hodson, 2011, Level 2; Dyer, 1994, Level 2; Fragala-Pinkham, Haley, & Goodgold, 2006, Level 2; Fragala-Pinkham, Haley, & O'Neill, 2008, Level 2; Giagazoglou et al., 2013, Level 2; Gorter, Holty, Rameckers, Elvers, & Oostendorp, 2009, Level 2; Khalili & Elkins, 2009, Level 1;

Salem, Gropack, Coffin, & Godwin, 2011, Level 1; Sukriti, Bhamini, & Kumaran, 2011, Level 1; Widman, McDonald, & Abresch, 2006, Level 2).

In addition, there are numerous types of physical activity interventions that have been implemented for children and youth who are disabled. These interventions that have been reported to improve the physical fitness levels of students with disabilities incorporate four forms of physical activity: (a) aquatic exercises; (b) physical fitness programs; (c) virtual reality games; and/or (d) physical education classes (i.e., peer mediated aerobic and motor activity) in the home, community, and school environments. Further, it was reported that the interventions were significantly more effective when implemented a minimum of 2 to 3 times a week for 20 min to 30 min per session for at least 6 weeks.

However, the available evidence in physical activity interventions was not strong. The quality of evidence provided in seven studies was moderate (Level 2); whereas, two studies related to virtual reality games and aerobic exercises using a randomly controlled trial design was rated as Level 1 according to the SORT. Due to the moderate quality and low quantity of studies related to physical activity interventions, the evidence was rated as a B for the strength of recommendation (moderate).

In summary, based on the evidence provided, physical activity interventions are beneficial for children and youth with disabilities. Some components of physical fitness improved include the health related (i.e., cardiovascular endurance, muscular strength/endurance, flexibility, BMI) and skill related (i.e., balance) components.

Physical Activity Levels of Children With and Without Disabilities

According to the 2008 Physical Activity Guidelines for Americans (HHS, 2008), children and youth, aged of 5 to 17 years, were recommended to engage in at least 60 min daily moderate to vigorous physical activity (MVPA) participation. Aerobic physical activities such as running or swimming were recommended as part of the 60 min daily physical activity. Further, as part of 60 min, muscle strengthening activities (e.g., weight training) were also recommended.

However, researchers have reported that children and youth with disabilities are more likely than those without disabilities to live physically inactive and sedentary lifestyles. In a longitudinal study, Zwier et al. (2010, Level 2) reported that the physical activity levels of 116 children with cerebral palsy aged 5 to 7 years were approximately 200 min per week which was significantly lower than their nondisabled peers (348 min per week). In a similar study by Steele et al. (1996, Level 2), it was reported that Canadian youth with physical disabilities were less likely to commit to exercise on a regular basis (39% never exercised) than those without disabilities and their physical inactivity was 4.5 times higher than their nondisabled peers. It was also true for children with intellectual disabilities. In a systematic review, it was reported that various researchers have provided consistent evidence that children with intellectual disabilities had significantly lower levels of physical activity compared to their peers without disabilities (Hinckson & Curtis, 2013, Level 2).

In summary, it was clear that inactivity and sedentary lifestyle are evident among children with disabilities. Further, their physical activity levels do not meet the national physical activity guideline (i.e., at least 60 min daily MVPA participation; HHS, 2008).

General Physical Education Programs With Students With Disabilities

More than 43 states in the United States have mandated physical education for elementary school students; 40 states have mandated physical education for middle/junior high school students; and 46 have mandated physical education for high school students (National Association for Sport and Physical Education & American Heart Association [NASPE & AHA], 2010). There is evidence of physical education programs that can have positive effects on students in school (Task Force on Community Preventive Services, 2005). Specifically, it has been suggested that physical education programs in school were effective in: (a) enhancing the physical activity level and the physical fitness and (b) managing the body weight among students without disabilities (Alderman, Benham-Deal, Beighle, Erwin, & Olson, 2012).

However, general physical education may not be an ideal place when it comes to increasing participation in physical activity of some students with disabilities. It has been reported that general physical education programs provide insufficient and considerably lower MVPA with students with disabilities which that is recommended by national health objectives (i.e., 50% of physical education time, 150 min per week in elementary, and 225 min per week in secondary; Nader, 2003, Level 2; Simons-Morton et al., 1994, Level 2; University of California at Los Angeles [UCLA] Center, 2007, Level 2). In the

investigation by Simons-Morton et al. the average proportion of physical education class time spent on MVPA was 8.6% and 16.1% in randomly selected elementary and middle schools, respectively. The MVPA time in physical education was 45 min per week in elementary, 80 min in middle school, and 110 min in high school. On average, 60% of every 30 min physical education class time was spent on students being physically inactive (McKenzie, Sallis, Faucette, Roby, & Kolody, 1993, Level 2; UCLA Center, 2007, Level 2).

Further, students with disabilities face physical, programmatic, and psychological challenges to participate in general physical education in school (Rimmer & Rowland, 2008). General physical education teachers may limit opportunities with students with disabilities to participate in physical activity within the physical education classes because the classes are designed toward competition. Able bodied students are many times unwilling to include students with disabilities on their teams because of the possibility of losing the game (Dunn & Leitschuh, 2009; Murphy & Carbone, 2008).

Further, students with disabilities may expend less energy than their peers without disabilities during the physical education classes because there may be various barriers associated with participation. These barriers could be inaccessible facilities, lack of teachers' knowledge to modify programs for the student, and lack of interest among the administration to address the access issue that may interfere with physical activity participation with students with disabilities (Dunn & Leitschuh, 2009; Murphy & Carbone, 2008).

In summary, general physical education might not be an appropriate place to enhance physical activity levels of some students with disabilities. This might be because of the inadequate environmental settings, the improper programmatic orientation (i.e., competition), the lack of acceptance from their nondisabled peers; and limited physical abilities of students with disabilities.

Theory of Planned Behavior Applied in General Physical Education

The core theoretical framework used in the present investigation is the theory of planned behavior in which human behavior is associated with the behavioral intention to perform a behavior (Ajzen, 1985). Previous research studies were reviewed to: (a) support relevance of the theory of planned behavior and (b) gain the insights on main methodologies. The research was selected if it was related to: (a) the application of theory of planned behavior, (b) the general physical educator population (general physical educators were selected because no study on adapted physical educators was identified), and (c) the behavior of teaching 50% of the class time devoted to moderate to vigorous physical activity or other teaching behavior (e.g., including students with disabilities in general physical education and using fitness assessments with the students with disabilities).

Teaching Behavior of Physically Active General Physical Education Classes

There were three studies that were located that met these criteria listed above. These studies were related to the theory of planned behavior to demonstrate the relationship between the behavior of teaching 50% of the class time devoted to MVPA

and associated constructs (i.e., attitude, subjective norm, perceived behavioral control) among general physical educators (Martin & Kulinna, 2004, Level 2; Martin & Kulinna, 2005, Level 2; Martin, Kulinna, Eklund, & Reed, 2001, Level 2). Throughout the three studies, more than 550 general physical educators completed a questionnaire designed to measure behavioral intention, attitude, subjective norm, and perceived behavioral control.

Based on the results of these investigations, general physical educators had strong behavioral intentions, positive attitudes, and perceived behavioral control about teaching 50% of their class time devoted to MVPA. It was also reported that general physical educators were willing to comply with the expectation of people who were important to them (i.e., administrators, fellow teachers, parents, students).

In comparison between these studies, attitude was the most influential construct on general physical educators' intentions to teach 50% of their class time devoted to MVPA. Attitude was reported to account for 45 to 50% of the variance in behavioral intention; whereas, subjective norm accounted for 3 to 8% of the variance in behavioral intention and perceived behavioral control had no or minimal impact explaining only 4 to 7% of the variance of behavioral intention.

Other Teaching Behaviors

Theory of planned behavior was also supported in the prediction of other behavioral intentions of general physical educators (i.e., administering a physical fitness test effectively, including students with disabilities in general physical education, providing physical activities as punishment). Stewart-Stanec (2009, Level 2) conducted

an investigation to measure general physical educators' attitudes, subjective norms, and perceived control related to effectively implementing a physical fitness test. Further, these variables were used to predict their intentions to effectively implement a physical fitness test. The study also involved a follow up examination of whether data from an instrument were in fact predictors for actual behavior performing. Participants who were purposely selected were 195 general physical educators (females = 125, males = 70). A questionnaire was developed and validated through two pilot studies. The final questionnaire consisted of 27 items measuring the constructs of attitude, subjective norm, perceived behavioral control, and behavioral intention.

Based on the results of standard multiple regression, attitude and perceived control were significant predictors for behavioral intention to effectively administer fitness tests explained by 31.2% of the variance of behavioral intention. In addition, attitude was the only contributing variable that explained 5.38% of the variance of actual behavior.

In addition, the theory of planned behavior was used to examine aquatic instructors' behavioral beliefs, normative belief, and control beliefs to predict their intentions to include students with mild and severe disabilities (e.g., mild intellectual disabilities, mild learning disabilities, severe or profound intellectual disabilities, multiple disabilities) in their aquatic programs (Conatser, Block, & Gansneder, 2002, Level 2). In this study, stepwise multiple regressions were used to determine the degree of prediction of the variables. It was reported that control belief was the most predictive variable

followed by behavioral belief for including students with mild disabilities in their aquatic program. Further, the control belief comprised the largest portion of variance in the behavioral intention for the inclusion of students with severe disabilities compared to behavioral belief and normative belief that were the next most influential variable.

However, the researchers identified that in contrast to the theory of planned behavior, perceived behavioral control did not predict actual behavior of inclusion of both mild and severe disabilities. In addition, the results of a correlated *t* test indicated that the aquatic instructors showed a more favorable attitude on and more confidence in the inclusion of students with mild disabilities than those with severe disabilities.

Similar findings were identified in the study by Richardson, Rosenthal, and Burak (2012, Level 2). These investigators examined psychological constructs from the theory of planned behavior to predict physical educator/coaches' intentions to use exercise as punishment. One hundred eighty-nine physical educators/coaches were recruited and completed a questionnaire. Based on the results, physical educators/coaches' intentions to punish students with the use of exercise were predicted by attitude and subjective norm but not perceived behavioral control. This relationship demonstrated the theory of reasoned action is more appropriate than the theory of planned behavior. The theory of reasoned action was an original version of the theory of planned behavior that does not include the construct of perceived behavioral control. Further, attitude was the most predictive variable and subjective norm was the next most predictive variable.

In another study by Burak, Rosenthal, and Richadson (2013, Level 2), preservice general physical educators' intentions, attitudes, and subjective norms regarding the use of exercise as punishment was assessed. Three hundred forty-five college students majoring in general physical education were recruited for the investigation. The results were similar to their past study (Richardson et al., 2012). The attitude toward behavior and the subjective norm constructs contributed most to predict the behavioral intentions of preservice general physical educators to use exercise as punishment.

In a similar study by Fournidou, Kudlacek, and Evagellinou (2011, Level 2), the behavioral intentions of general physical educators teaching students with disabilities in general physical education was measured and its determinants of an attitude, a subjective norm, and perceived behavioral control were also assessed. One hundred general physical educators completed the survey and the data were analyzed using stepwise multiple regressions. The results did not conform to the theory of planned behavior. The perceived behavioral control and attitude toward behavior, predicted the behavioral intentions of general physical educators; however, the subjective norm did not predict the behavioral intentions of general physical educators.

The theory of planned behavior was used to predict the behavioral intentions of general physical educators to include students with intellectual disabilities in general physical education classes in Korea. Jeong and Block (2011, Level 2) examined the theory of planned behavior constructs (i.e., attitude, subjective norm, perceived behavioral control, behavioral belief, normative belief, control belief) to predict 220

physical educators' intentions to teach students with intellectual disabilities. Based on the results, indirect (i.e., behavioral belief, normative belief, control belief) and direct measures (i.e., attitude, subjective norm, perceived behavioral control) significantly contributed to the prediction of the behavioral intention to teaching students with intellectual disabilities. Of the constructs, the attitude and behavioral belief were the strongest predictors of the behavioral intention (25.9%, 38.1%, respectively). Further, the behavioral intention was only a predictor of the behavior.

In summary, an attitude toward a behavior most often contributed to predict a behavioral intention while the impacts of the other contributors (i.e., subjective norm, perceived behavioral control) were minimal or sometimes nonexist. In general, these researchers provided empirical evidence for the application of the theory of planned behavior to explain the predictive relationship between behavioral intentions, attitudes, subjective norms, and perceived behavioral control of general physical educators and aquatic instructors.

Roles and Responsibilities of Adapted Physical Educators

Adapted physical educators have a variety of roles and responsibilities. In multiple descriptive studies by Akuffo and Hodge (2008, Level 2) and Kudlacek, Jesina, Sterbova, and Sherrill (2008, Level 2), adapted physical educators who worked in an urban school district in Ohio and school districts in Texas and California were interviewed. Based on the qualitative data from the interviews, it was reported that the primary role of adapted physical educators in the urban school district in Ohio were to

independently provide direct instruction to students with various types of disabilities. Further, their responsibilities were: assessment, development of individualized education program, development of lesson plan, class organization and management, safety assurance, and communication of other educational personnel (e.g., special education teachers, general physical educators), and parents. In California and Texas, most adapted physical educators reported that their caseload was 44 to 90 students and their roles other than direct service were consulting with general physical educators and involving decision making process in Individualized Education Program (IEP) meetings.

In addition, Dillon and Sherrill (2003, Level 2), Kelly and Gansneder (1998, Level 2), and Obrusnikova and Kelly (2009, Level 2) conducted survey research to identify the job demographics of adapted physical educators. Approximately 500 adapted physical educators across the nation participated in the survey. The key findings were that adapted physical educators spent 43% to 52% of their work in direct service compared to 6% to 26% in indirect service; 9% to 15% in traveling; administrative 13% to 16%; and 6% to 38% in outside responsibility. A majority of adapted physical educators (64% to 84%) provided adapted physical education services with elementary aged students. Further, it was interesting to note that caseloads were decreased over time (104 students in 1998, 76 in 2003, 50.5 in 2009, respectively).

In addition to the roles and responsibilities of adapted physical educators, expected teaching competencies of adapted physical educators related to *Adapted Physical Education Standards* (APENS; Kelly, 2006), the *National Standards for*

Beginning Physical Education Teachers (NASPE, 2003), and the *Standards for Advanced Programs in Physical Education Teacher Education* (NASPE, 2001) were determined (Bowers, 2009, Level 2). Ten professionals in adapted physical education preparation programs were asked what competencies practitioners should have to be highly qualified adapted physical educators by rating each competency listed in APENS and NASPE. In this study, it was noted that the professionals rated 92 of the 145 subcategories (63%) were important or very important competencies to be highly qualified adapted physical educators within the categories of curricular knowledge; content knowledge; assessment; planning and management; instruction; communication; collaboration, reflection, leadership, and professionalism; and mentoring, peer/student teaching, and paraprofessionals. For instance, in the professionals' opinion, to be highly qualified adapted physical educators, practitioners should: (a) use the appropriate time in lesson (i.e., maximize physical activity or movement time, optimize instruction time, reduce transition time, strategies to reduce management times); (b) consider safety issues when teaching; (c) accommodate environment and equipment to be appropriate with students with disabilities; and (d) collaborate with physical therapists and/or occupational therapists, family and/or guardians, and classroom teachers.

In conclusion, as reported in numerous studies, the most important roles and responsibilities of adapted physical educators were to provide direct instruction, participate in IEP decision making process, and determine placement with students with disabilities. In order to perform the roles and responsibilities, adapted physical educators

spent their majority time devoted to direct service followed by administrative work and indirect service such as consulting. Further, while performing the major roles and responsibilities, adapted physical educators need to demonstrate numerous teaching competencies to be considered highly qualified adapted physical educators (Adapted Physical Activity Council of the American Association for Physical Activity and Recreation & National Consortium for Physical Education for Individuals With Disabilities [APAC & NCPEID], 2010). It should be noted of all the articles reviewed in this section that Bowers (2009) directly addressed physical activity time.

Possible Influential Factors Related to the Teaching Behavior of Adapted Physical Educators

To identify possible factors that may influence teaching behaviors of adapted physical educators, numerous articles related to adapted physical educators were initially retrieved from databases (e.g., SportDiscus, Medline, Academic Search Complete) using key search terms and related key search terms (e.g., adapted physical educator, adapted physical education teacher). Each article was then individually reviewed and determined whether it is related to the teaching behavior of adapted physical educators. The inclusion criteria for this literature review were as follows: (a) articles were written in English and (b) outcome variables were measured from adapted physical educators. A total of 36 articles were finally chosen and sorted into majors themes: (a) attitude of adapted physical educators, (b) challenges and concerns, (c) district size, and (d) levels of expertise and experience.

Attitude of Adapted Physical Educators

There is little known about a psychological attribute such as attitude related to the teaching behavior of adapted physical educators. One study by Tripp (1988, Level 2) was conducted to examine attitudes of adapted physical educators about teaching students with disabilities. Instrument used was *Attitude Toward Disabled Persons Scale* developed by Yuker, Block, and Campbell (1960). It was surprising that adapted physical educators had a negative attitude toward teaching students with disabilities. Further, they felt more accepting of students with physical disabilities such as an amputation or a harelip than other disabilities such as an intellectual disability or cerebral palsy. Although the negative attitude toward teaching students with disabilities may influence the teaching behavior of adapted physical educators, it should be noted that this study was conducted over 25 years ago. There is a need to investigate today's adapted physical educators.

Adapted Physical Educators' Concerns About Their Roles and Responsibilities

There might be difficulties and hindrances that adversely affect adapted physical educators in performing their roles and responsibilities (e.g., providing direct instruction, developing a lesson plan, implementing assessment, attending a meeting). According to the theory of planned behavior, personal beliefs about difficulties and hindrances to perform a behavior are negatively associated with the likelihood of performing an actual behavior (Ajzen, 1985). The more difficulties the adapted physical educators face at work, the less confident they are over a particular behavior (e.g., teaching physically active classes). This lack of confidence might in turn weaken the behavioral intention and

decrease the probability of initiating the behavior. Therefore, determining adapted physical educators' beliefs or concerns about the difficulties and the hindrances of carrying out their roles and responsibilities are likely to allow for the understanding of why or why not they are engaged in a specific behavior (e.g., teaching physically active classes).

In three descriptive research studies (Akuffo & Hodge, 2008, Level 2; Hodge & Akuffo, 2007, Level 2; Kudlacek et al., 2008, Level 2), adapted physical educators in Ohio, California, and Texas were interviewed to identify their concerns about teaching students with disabilities. The common concerns reported across the studies were a large class size, a lack of adequate equipment, a lack of teaching place (i.e., limited gymnasium space, no gymnasium time allocated for adapted physical education, an unexpected pull out from the gymnasium in the middle of the lesson), a negative attitude and behavior of paraeducators during adapted physical education classes, a large caseload, a lack of administrative support, excessive administrative work, a lack of respect from other school personnel (e.g., administrator, special educators, physical educators, classroom teachers, paraeducators), excessive transition from site to site, difficulty in moving equipment from one's own car to the gymnasium, and a lack of inservices in adapted physical education.

Krueger, DiRocco, and Felix (2000, Level 2) also examined adapted physical educators' concerns specifically related to developing transition plans with students with disabilities. The transition plan for adapted physical education refers to preparing students with disabilities for physical leisure activities in their later lives. The concerns

reported were a lack of transportation, social isolation of students with disabilities from their peers, budget restrictions; a lack of adapted equipment, a lack of collaboration with other school personnel (e.g., general physical education, special education teachers), a lack of recreation opportunities with students with disabilities, a lack of communication skills of students with disabilities; a lack of time to participate in community physical activity programs; and a lack of parents' or caregivers' support.

In summary, these concerns identified in these studies could negatively impact the adapted physical educators’ intentions to provide physically active classes within the school environment and not infuse the program into the community environment. The common concerns across the studies were a lack of adequate equipment and a lack of support.

District Size

While no relationship between district size and a behavior of adapted physical educator has been directly investigated, in a study of Krueger et al. (2000, Level 2), there were differences in the prior concerns of adapted physical educators between smaller school districts (under 3,000 students) and larger school districts (3,000 and more students). In this study, related to adapted physical educators' concerns about developing and implementing a transition plan were rank ordered and compared between smaller and larger school districts. Based on the results, 50% of the adapted physical educators in larger school districts believed that there was a lack of parent or caregiver support when implementing a transition plan while only 26% in smaller school districts believed this

was true. Transportation was also a major concern among adapted physical educators (84%) in small school districts; whereas, it was less likely considered a challenge by 36% of adapted physical educators in large school districts.

There was inconsistent degree of adapted physical educators' beliefs about the concerns between the large and small districts. It is also possible that their behaviors might influence differently by district sizes. Further, adapted physical educators have different concerns during the instruction and these different concerns would facilitate or inhibit their teaching behavior.

Levels of Expertise and Experience

Levels of expertise and experience may or may not influence the teaching behavior of adapted physical educators. Everhart et al. (2013, Level 2) and Solmon and Lee (1991, Level 2) conducted studies to explore and compare expert and novice adapted physical educators teaching students with disabilities and developing a lesson plan. In the study of Everhart et al., it was reported that teaching behaviors were similar in expert and novice adapted physical educators. Both groups were engaged in actual teaching moments (e.g., giving a corrective, positive feedback, physical assistance) more than class management (e.g., intervening inappropriate behavior, setting up equipment) during the class. However, the patterns of their teaching moments between the expert and the novice were different. For instance, the most frequent teaching behavior observed was an instruction-guidance-instruction pattern for the experts; whereas, in the novice, a corrective feedback-instruction-guidance pattern was used.

In addition, the influence of experience on the development of a lesson plan in adapted physical educators was evident in the study by Solomon and Lee (1991). The experienced adapted physical educators were more likely than preservice adapted physical educators to develop a lesson plan that was flexible and student-centered. Lesson plans developed by experienced adapted physical educators provided more optional or alternative physical activities on the basis of students' needs and also more physical activity choices with students than the inexperienced teachers.

The conclusion was that levels of expertise and experiences of adapted physical educators might be considered concerns and barriers that may negatively impact their teaching behavior (e.g., teaching physically active adapted physical education classes). It is also possible that their expertise and experience in teaching adapted physical education classes might be negatively associated with their attitude, subjective norm, and perceived behavioral control over the teaching behavior.

CHAPTER III

METHOD

The purposes of this study were to: (a) determine adapted physical educators' opinions about the behavior of teaching 50% of the class time devoted to moderate to vigorous physical activity to students with disabilities for obesity prevention and intervention; (b) explore intention, attitude toward behavior, subjective norm, perceived behavioral control, control belief, behavioral belief, and normative belief of adapted physical educators with regard to teaching 50% of the class time devoted to moderate to vigorous physical activity to students with disabilities for obesity prevention and intervention; (c) determine the relationships between intention, attitude toward behavior, subjective norm, perceived behavioral control, control belief, behavioral belief, and normative belief; and (d) determine if attitude toward behavior, subjective norm, perceived behavioral control, control belief, behavioral belief, and normative belief will be able to predict adapted physical educators' intention to teach 50% of the class time devoted to moderate to vigorous physical activity to students with disabilities for obesity prevention and intervention. This investigation was divided into three Phases based on the purposes of the study (see Table 1 on the next page).

Table 1

Study Procedures (Ajzen, 2006; Francis et al., 2004)

Phase	Explanation
Phase I (Elicitation)	• Elicit participants' beliefs about the target behavior (i.e., teaching MVPA at least 50% of the time in their adapted physical education classes). • Conduct a content analysis of the responses.
Phase II (Questionnaire Formulation)	• Based on the content analysis, formulate 7-point scale items for three indirectly measured constructs (i.e., behavioral belief, normative belief, control). • Formulate 7-point scale items for four directly measured constructs (i.e., behavioral intention, attitude toward behavior, subjective norm, perceived behavioral control). • Validate the questionnaire. • Conduct the content validation process through the use of a panel of experts.
Phase III (Main Study)	• Data collected to determine attitude toward behavior, subjective norm, perceived behavioral control, behavioral belief, normative belief, and control belief of adapted physical educators.

Note. MVPA = moderate to vigorous physical activities.

During Phase I (i.e., elicitation), adapted physical educators' salient behavioral, normative, control beliefs about teaching MVPA at least 50% of the class time with students with disabilities were elicited and determined through the use of the content analyses. A questionnaire was developed that was comprised of open ended questions to elicit adapted physical educators salient beliefs.

During Phase II (i.e., questionnaire formulation using the open ended responses from Phase I), a questionnaire was developed using the seven constructs (i.e., behavioral intention, attitude toward the behavior, subjective norm, perceived behavioral control, behavioral belief, control belief, normative belief) based on theory of planned behavior. Further, a panel of experts were used to provide the content validation of the questionnaire.

During Phase III (i.e., main study), the questionnaire developed in Phase II was used to measure the theory of planned behavior constructs of adapted physical educators related to teaching MVPA at least 50% of the class time with students with disabilities. In addition to content validity (assessed in Phase I), internal consistency and test-retest reliability were measured to determine whether questionnaire items that were supposed to measure the same direct construct (e.g., behavioral intention) provided similar scores, as well as, whether the questionnaire items that proposed to measure the same indirect construct (e.g., behavioral belief) produced consistent scores over time. The information regarding the methods used in this investigation was described in detail in chronological order based on the three phases in the following sections.

Phase I (Elicitation)

The purpose of Phase I was to determine adapted physical educators' salient beliefs (i.e., behavioral, normative, control beliefs) about teaching physically active adapted physical education classes with students with disabilities at least of 50% of the class time. A salient belief was defined as the belief that first crosses one's mind regarding a given object or behavior (Ajzen, 2006). The salient beliefs of adapted physical educators were

elicited using a questionnaire. The following is the presentation of Phase I under the following headings: (a) Participants, (b) Instrument Development, (c) Instrument, (d) Procedures, and (e) Data Analysis.

Participants

Potential participants were 84 adapted physical educators who were purposely selected based on the following criteria: Presently teaching students with disabilities adapted physical education in kindergarten, elementary, middle, and/or high school classes in the Dallas Fort Worth Metroplex, Texas. Out of the 84 potential participants, 26 completed and returned the questionnaire. These were considered the participants for Phase I. A target participant size of 25 was considered acceptable to obtain their salient beliefs (Francis et al., 2004). Participant's demographic information is described in Chapter IV (see Table 7, p.80).

Instrument Development

The questionnaire from Kudlacek, Valkova, Sherrill, Myers, and French (2002) and Rizzo, So, and Tripp (2006) was modified and used in Phase I. This questionnaire was initially revised by the investigator. Next, the revised questionnaire was sent to a panel of five content experts who were asked to: (a) provide comments and editorial changes to improve readability and quality of the questionnaire and (b) assure the relevance of the questionnaire based on the purposes of this investigation. The content experts had professional expertise in at least one of the topics related to the present investigation (i.e.,

theory of planned behavior, obesity, physical education teacher education, and/or adapted physical education) and more than 10 years of experience related to survey research.

Next, based on the feedback from the experts, the questionnaire was revised again by the investigator and given again to the panel for a more in depth review. There was a total of three rounds of reviews and revisions conducted between the investigator and the content experts. The development of questionnaire was completed after there was the total agreement of the content experts. The questionnaire was then typed into PsychData (www.psychdata.com). PsychData is an online survey that has many features pertinent to academic research. PsychData allows for efficient data collection and storage at low cost (e.g., no need for paper, printing, mailing fees), concise and clear data organization, and fast responses from participants.

Instrument

The questionnaire consisted of three sections: (a) cover letter, (b) theory of planned behavior questions, and (c) demographic questions (see Appendix B). In the first section, there was a cover letter with introductory information that explained the purposes and significance of the study, the general information (i.e., confidentiality, online questionnaire process, contact information of the investigator), and the electronic link to the questionnaire.

The second section comprised nine questions within the three constructs related to theory of planned behavior (see Table 2 on the next page): behavioral belief, normative belief, and control belief. The purpose of the questions was to elicit information related to the three constructs from the participants. The instructions were attached to the questions,

including the definitions of terms used in the questionnaire and the instructions on how to respond.

Table 2

Open Ended Questions of the Behavioral, Normative, and Control Belief Constructs

Open Ended Questions
Behavioral belief
1. What do you believe are the advantages for you teaching MVPA at least 50% of the time in your adapted physical education classes for your students with disabilities?
2. What do you believe are the disadvantages for you MVPA at least 50% of the time in your adapted physical education classes for your students with disabilities?
3. Is/are there any other consequence(s) associated with teaching MVPA at least 50% of the time in your adapted physical education classes for your students with disabilities?
Normative belief
4. Are there any individuals or groups who would approve of you teaching MVPA at least 50% of the time in your adapted physical education classes for your students with disabilities?
5. Are there any individuals or groups who would disapprove of you teaching MVPA at least 50% of the time in your adapted physical education classes for your students with disabilities?
6. Is/are there any other individual(s) or group(s) who come to mind when you think about teaching MVPA at least 50% of the time in your adapted physical education classes for your students with disabilities?
Control belief
7. What factors or circumstances make it easier or enable you to teach MVPA at least 50% of the time in your adapted physical education classes for your students with disabilities?
8. What factors or circumstances make it more difficult or prevent you from teaching MVPA at least 50% of the time in your adapted physical education classes for your students with disabilities?
9. Is/are there any other issue(s) that comes to mind when you think about teaching MVPA at least 50% of the time in your adapted physical education classes for your students with disabilities?

Note. MVPA = moderate to vigorous physical activity.

The third and last section consisted of the questions to determine the demographic information (e.g., gender, age, ethnicity, education level, certification). Multiple choice and fill in type questions were used.

Procedures

Prior to the participant recruitment, an Institutional Review Board (IRB) approval from Texas Woman's University was obtained (see Appendix C). The recruitment process involved: (a) contacting by email the staff who managed listserv of adapted physical educators from Texas Association for Health, Physical Education, Recreation and Dance (TAHPERD); and (b) asking the staff to disseminate the questionnaire electronically to potential participants. To disseminate the questionnaire, the investigator provided the TAHPERD staff an e-mail script (i.e., cover letter) embedded with a link to the questionnaire in PsychData (i.e., online survey software). The TAHPERD staff sent the link to potential participants (i.e., adapted physical educators) electronically. The potential participants were asked to read the brief information in the cover letter and requested to complete the questionnaire. If the potential participants were interested in participating in the questionnaire, they were asked to click on to the link to access the questionnaire in PsychData and then complete the questionnaire.

Adapted physical educators who fully met the participant criteria and completed the questionnaire were considered participants in the present investigation. Once the participants completed the questionnaire, responses were stored in a PsychData account. The participant's responses to the questionnaire were anonymous and voluntary.

Data Analysis

When data collection was completed, the responses from each question were compiled into one accessible document. Then the responses were content analyzed. The content analysis involved three experts who were selected from Texas Woman's University meeting the following criteria: (a) had 10 or more years of experience in scientific publications in the field of Adapted Physical Education/Activity and (b) had taught at least two or more graduate courses related to adapted physical education for 10 or more years.

As part of the preparation for the content analysis, the experts as a group were given a brief presentation about the present investigation and the purposes of the questionnaire being conducted. After the presentation, the experts were provided instructions on how to sort responses of the participants' personal beliefs into categories. During the preparation, the experts were able to ask the investigator any questions regarding the content analysis (Berg, 2007).

When the preparation had been completed, the experts were provided the participants' responses complied from the elicitation process and asked to sort the responses into categories. After 1 week, the experts met with the investigator to compare their categorizing outcomes. To finalize the categorization, there must be a consensus (2 out of the 3 agreements) between the experts to the following questions (Hartnett, 2011): (a) Does each response belong to the correct category and (b) Are responses in the same category consistent to each other? If there was not a consensus between the experts, the

investigator brought all the disagreement issues to a meeting. The discussion was held on each issue and the issue was resolved when everyone agreed; otherwise the response was excluded. Next, the number of responses of participants in each category of behavioral, normative, and control belief were counted and ranked in order from the most frequently mentioned to the least frequently mentioned belief (Francis et al., 2004).

Phase II (Questionnaire Formulation)

Phase II, the development of a questionnaire, involved: (a) the review and the revision of a questionnaire and (b) the determination of the content validity (i.e., whether the questionnaire measures given constructs of behavioral intention, attitude toward behavior, subjective norm, perceived behavioral control, behavioral belief, normative belief, control belief). Phase II is presented under the following headings: (a) Instrument Development and (b) Instrument.

Instrument Development

The questionnaire was developed based on the theory of planned behavior (Ajzen, 2006; Francis et al., 2004) and the psychological test development manual (Miller, Mclntire, & Lovler, 2010). First, the investigator reviewed literature related to the application of theory of planned behavior in the fields of adapted and general physical education. Second, a previously used questionnaire by Kudlacek et al. (2002) and Rizzo, So, and Tripp (2006), entitled the *Physical Educators' Intention Toward Teaching Individuals With Disabilities-II* (PEITID-II) was selected. The questionnaire was not available in the articles. The investigator contacted the first author of the study, Terry L. Rizzo and asked him to send an

electronic copy of the questionnaire to the investigator. Third, the original questionnaire PEITID-II was then initially modified based on the purposes of the present investigation to produce a draft of the questionnaire.

The PEITID-II was widely used by numerous researchers (Oh et al., 2010; Rizzo, So, & Tripp, 2006; Tripp & Rizzo, 2007) to assess theory of planned behavior constructs (i.e., behavioral intention, attitude toward a behavior, subjective norm, perceived behavioral control, behavioral belief, normative belief, control belief) of over 500 preservice general physical educators and general physical educators in school districts (the number of the participants were combined from the above past studies). The test-retest reliabilities for behavioral intention, attitude toward behavior, subjective norm, perceived behavioral control, behavioral belief, normative belief, and control belief were .93, .90, .94, .89, .90, .92, and 93, respectively ($p < .001$). Cronbach's alpha coefficients for behavioral intention, attitude toward behavior, subjective norm, perceived behavioral control, behavioral belief, normative belief, and control belief were .83, .77, .88, .77, .73, .77, and .74, respectively. Further, the researchers of these studies also provided evidence of the content and construct validity for the questionnaire to assure its appropriateness of the use for the population of physical educators.

Fourth, the draft version of the PEITID-II was reviewed in depth by a panel of five content experts, six doctoral students, and four adapted physical educators. The content experts had professional expertise in the present investigation topics (i.e., theory of planned behavior, obesity, physical education teacher education, and/or adapted physical education)

and more than 10 years of experience in survey research. The doctoral students had a master's degree in Kinesiology with a specialization in Adapted Physical Education/Activity, had taken at least two or more graduate courses related to adapted physical education, and had at least 500 hours of field experience teaching general/adapted physical education to students with disabilities in a public school environment.

The adapted physical educators comprised four field-experts in adapted physical education from Dallas/Fort Worth Metroplex in Texas. The criteria for inclusion were as follows: (a) presently teaching adapted physical education in the state of Texas; (b) had a graduate degree (e.g., master's or doctorate) with an emphasis in adapted physical education, and (d) had taught general/adapted physical education for at least 5 years. The panel of content experts, doctoral students, and adapted physical educators were asked to review the draft questionnaire using the following questions (see Table 3).

Table 3

Review Questions

Questions
1. Are instructions for completing this questionnaire clearly written?
2. Are the questions easy to understand?
3. Do you understand how to indicate answers (e.g., mark or drop down the response)?
4. Are the response choices NOT overlapping?
5. Do the response choices provide all possible options that could comprise a response list?
6. Can you easily use Psychdata software commands?
7. Do you have any suggestions regarding the addition or the deletion of statements; or the clarification of instructions or improvement of the format?

Further, panel members were asked to provide any editorial changes if they thought it would improve the readability and the quality of the questionnaire. The draft questionnaire was revised based on the feedback from all the reviewers.

After the in depth revision the content experts were asked to evaluate the revised questionnaire to determine the Content Validity Index (CVI; Lynn, 1986). To determine content validity, an evaluation was conducted for each item to determine whether the item was intended to measure a given construct using a rating scale from 1(*not at all relevant*) to 4 (*very relevant*). The CVI value was calculated by dividing the number of experts who rated 3 or 4 by the total number of experts (N = 5). The acceptable CVI value was a minimum of .80 (Lynn).

Instrument

According to the theory of planned behavior (Ajzen & Fishbein, 1980), there were four constructs being *directly* measured: (a) behavioral intention; (b) attitude toward behavior, (c) subjective norm, and (d) perceived behavioral control. In addition, attitude toward behavior, subjective norm, and perceived behavioral control constructs were also *indirectly* measured through: (a) behavioral belief; (b) normative belief; and (c) control belief, respectively. Construct is defined as ". . . any concept or characteristic that a test is designed to measure" (Miller et al., 2010, p. 190).

Behavioral intention. Behavioral intention is defined as an adapted physical educator's willingness to perform a behavior. According to theory of planned behavior,

behavior is solely predicted by behavioral intention. Two items were formulated for the intention construct using a 7-point scale. An example is as follows:

- I intend to teach moderate to vigorous physical activities at least 50% of the time in my adapted physical education classes

  Likely: __1__:__2__:__3__:__4__:__5__:__6__:__7__: Unlikely

Attitude toward behavior and behavioral belief. Attitude toward behavior refers to the evaluation of whether an adapted physical educator is in favor or disfavor of performing a behavior. This construct was directly measured using three items. One of items is as follow:

- Teaching moderate to vigorous physical activities at least 50% of the time in my adapted physical education classes would be:

Extremely good: __1__:__2__:__3__:__4__:__5__:__6__:__7__: Extremely bad

Further, it is assumed that attitude toward behavior is determined by behavioral belief (defined in Phase I) that consists specifically of two subconstructs: behavioral belief strength and outcome evaluation (Ajzen & Fishbein, 1980). Behavioral belief strength refers to an adapted physical educator's belief about the probability of consequences of a behavior (e.g., I believe behavior A will likely or unlikely produce consequence B). Outcome evaluation refers to an adapted physical educator's positive or negative evaluation of the consequences (e.g., the consequence B of performing a behavior will be good or bad). Overall behavioral belief was measured in combination of these two subconstructs.

The top 75% of the most mentioned responses in Phase I were considered salient beliefs and converted into a set of statements with the use of a 7-point scale (Francis et al., 2004). There were six salient beliefs (see Table 8 in Chapter IV, p. 82). Each was transformed into items for behavioral belief construct. For instance, it was reported in Phase I that adapted physical educators believed that teaching MVPA at least 50% of the class time was more likely to improve physical fitness (i.e., cardiorespiratory endurance, muscle strength and endurance, flexibility, Body Mass Index) of students with disabilities. This salient belief was then transformed into the statement to assess behavioral belief strength. The example of items is as follows:

- Teaching moderate to vigorous physical activities at least 50% of the class time would improve physical fitness (i.e., cardiorespiratory endurance, muscle strength and endurance, flexibility, Body Mass Index) of students with disabilities:

Strongly agree: __1__:__2__:__3__:__4__:__5__:__6__:__7__: Strongly disagree

Further, outcome evaluation for this salient belief (i.e., teaching MVPA at least 50% of the time improves improve physical fitness of students with disabilities) was also transformed into a following statement:

- Improving physical fitness of students with disability would be:

Extremely valuable: __1__:__2__:__3__:__4__:__5__:__6__:__7__: Extremely worthless

Because there are six salient behavioral beliefs, six items were formulated for each of the two subconstructs (i.e., behavioral belief strength and outcome evaluation) and there were total 12 items for behavioral belief construct.

To determine the overall behavioral belief, there were two steps. First, the result of behavioral belief strength was multiplied by the result of outcome evaluation for each salient belief. For instance, adapted physical educators rated 3 for the former item (presented in this section) for behavioral belief strength and rated 5 for the latter item for outcome evaluation. The result of 3 multiplied by 5 was 15. This number indicated the degree of a single behavioral belief (in this case about teaching MVPA at least 50% of the time improves improve physical fitness of students with disabilities). Second, as mentioned earlier, there were six salient behavioral beliefs. Therefore, the calculations over all six salient behavioral beliefs were conducted and the results were aggregated. The aggregated score indicated overall behavioral belief, as well as, the indirect measure for attitude toward behavior. More information about how to score the belief constructs is described later in this chapter in the Construct Scoring Methods section.

Subjective norm and normative belief. Subjective norm refers to an adapted physical educator's perceptions of the social influence to perform or not perform a behavior. This construct was assessed with the use of two 7-point scale items. An example is as follows:

- Most people who are important to me think that I should teach moderate to vigorous physical activities at least 50% of the time in my adapted physical education classes:

Strongly agree: __1__:__2__:__3__:__4__:__5__:__6__:__7__: Strongly disagree

Subjective norm is determined by normative belief. Specifically, it has two subconstructs: normative belief strength and motivation to comply. Normative belief strength is related to an adapted physical educator's belief about how important or significant individuals (e.g., parents, general physical educators, administrators) would think of him or her doing a behavior. Motivation to comply is the evaluation of whether the adapted physical educator complies with the importance of people's expectation about performing a behavior (i.e., teaching MVPA at least 50% of the class time).

Six normative beliefs were determined in Phase I (see Table 9 in Chapter IV, p. 83) and then infused into items. There were 12 items (6 items for each of subconstructs). Examples of each of normative belief strength and motivation to comply are as follows:

- Classroom teachers think that I should teach moderate to vigorous physical activities at least 50% of the time in my adapted physical education classes:

Strongly agree: __1__:__2__:__3__:__4__:__5__:__6__:__7__: Strongly disagree

- Generally speaking, I would do what classroom teachers think I should do:

Strongly agree: __1__:__2__:__3__:__4__:__5__:__6__:__7__: Strongly disagree

Overall normative belief was calculated by using the same formula described in the attitude toward a behavior and behavioral belief section (see pp. 59-61).

Perceived behavioral control and control belief. Perceived behavioral control refers to an adapted physical educator's perceptions of the ease or difficulty to engage in a behavior. Three items were formulated to measure a given construct. The example is as follows:

- If I wanted to, I am confident I could teach moderate to vigorous physical activities at least 50% of the time in my adapted physical education classes:

Strongly agree: __1__:__2__:__3__:__4__:__5__:__6__:__7__: Strongly disagree

Further, perceived behavioral control was determined by an indirect measure of control belief which has two components: control belief strength and control belief power. Control belief strength is an adapted physical educator's belief about the presence of factor that makes it easy or difficult to perform a certain behavior (i.e., teaching MVPA at least 50% of the class time). Control belief power is an adapted physical educator's evaluation of whether a perceived factor would facilitate or inhibit him or her to perform the behavior (e.g., factor A will make it difficult or easy for me to perform a behavior). Overall control belief was determined in combination of these subconstructs. There were six items for each subconstruct (see Table 10 in Chapter IV, p. 85). The example is as follows:

- I expect insufficient support from staff and parents when teaching moderate to vigorous physical activities at least 50% of the time in my adapted physical education classes

Strongly agree: __1__:__2__:__3__:__4__:__5__:__6__:__7__: Strongly disagree

- A lack of support from school staff and parents would make it difficult for me to teach moderate to vigorous physical activities at least 50% of the time in my adapted physical education classes:

Strongly agree: __1__:__2__:__3__:__4__:__5__:__6__:__7__: Strongly disagree

Next, the items were joined with the four other parts of the questionnaire (see Appendix D): (a) cover letter; (b) prescreening test; (c) instructions and definitions of terms used in the questionnaire and a behavior of interest; and (d) demographic information of the participants (e.g., age, gender, district size, school). Each part of the questionnaire was placed in the order of the four sections.

In the first section, a cover letter was placed with introductory information (i.e., purposes and significance of the study, confidentiality, online questionnaire process, contact information of the investigator) and the electronic link to the questionnaire. The second section contained a prescreening test that consisted of one multiple choice question used to select teachers who currently teach adapted physical education or a combination of general and adapted physical education and filter out others (e.g., administrators, students, practitioners, scholars, coaching, athletic training, physical/occupational therapy).

The third section comprised 46 items within the seven constructs (i.e., behavioral intention, attitude toward behavior, subjective norm, perceived behavioral control, behavioral belief, normative belief, control belief). Further, the instructions were provided prior to the items, including the definitions of terms used in the questionnaire and the instructions on how to respond. The fourth section consisted of nine items to determine the demographic information (e.g., gender, age, ethnicity, education level, certification). Multiple choice and fill in type questions were used. There were a total of 55 items in the instrument.

Pilot Study

A pilot study was developed to determine internal consistency reliability and identify any errors related to taking the questionnaire (e.g., inadequate direction, item wording, item ordering effects). However, due to the limited number of the participants, a pilot study could not be conducted.

For an alternative approach to minimize errors and determine internal consistency reliability, adapted physical education teachers (i.e., 4), adapted physical education (i.e., doctoral students (i.e., 6), and content experts (i.e., 5) were asked to provide feedback after taking the questionnaire. Based on their feedback, the questionnaire was revised during the content validity process. Further, the internal consistency reliability was determined based on the results of the data collected in Phase III. For more information related to the procedures of the alternative approach, refer to Instrument Development in Phase II in this chapter (see pp. 55-58).

Phase III (Main Study)

During Phase III, a study was designed to examine the direct and indirect constructs of adapted physical educators' behavioral intentions, attitudes toward a behavior, subjective norms, perceived behavioral controls, control beliefs, behavioral beliefs, and normative beliefs with regard to teaching MVPA at least 50% of the class time with students with disabilities based on the theory of planned behavior. The questionnaire developed in Phase II was used to assess these constructs of adapted physical educators. Phase III is presented

under the following headings: (a) Participants, (b) Instrument, (c) Procedures, and (d) Test-Retest Analysis.

Participants

Participants were 122 current adapted physical educators across the United States (*N* = 122). The questionnaire was sent to all the members in: (a) Texas Association for Health, Physical Education, Recreation and Dance (TAHPERD); (b) New York State Association for Health, Physical Education, Recreation, and Dance (NYS AHPERD); and (c) National Consortium for Physical Education for Individuals With Disabilities (NCPEID). In addition, the questionnaire was distributed to Certified Adapted Physical Educators (CAPEs) who passed the Adapted Physical Education National Standards (APENS) examination. Potential participants completed and passed a prescreening test and then completed, and submitted the questionnaire. The members of these organizations, including CAPEs, were considered participants who identified themselves as adapted physical educators or a combination of and general and adapted physical educators.

Two state level organizations approved the present study. TAHPERD is a professional organization and the only organization in Texas serving professionals in the fields of health education, physical education, recreation, and dance. This organization comprises over 4,500 professionals and students members serving education from kindergarten through higher education. The NYS AHPERD is a professional organization across the New York State in the fields of health education, physical education, recreation,

and dance to support, encourage, facilitate, and advocate physically active and healthy lifestyles through school and community programs.

In addition, one national level organization participated in the study. The NCPEID is a national organization focused on encouraging physical activity and independence among individuals with disabilities, as well as, promoting legislation and personal preparation programs that improve the quality of physical education and recreation for individuals with disabilities. Members of this organization are professors, teachers, general practitioners, and doctoral students in the fields of adapted physical education and therapeutic recreation. The APENS examination is part of the NCPEID to promote 15 Adapted Physical Education Standards and to provide CAPEs across the United States.

Instrument

The questionnaire validated in Phase II was used to gather information regarding behavioral intention, attitude toward behavior, subjective norm, perceived behavioral control, behavioral belief, normative belief, and control belief of adapted physical educators about teaching at least 50% of their class time devoted to moderate to vigorous physical activity to students with disabilities. The questionnaire packet consisted of: (a) cover letter; (b) prescreening test; (c) introduction and general information sheet of the study; (d) main questionnaire; and (e) demographic information (e.g., age, gender, district size, school). For more information regarding instrument, refer to Instrument section in Phase II (see Appendix D).

A prescreening test was provided before the introduction of the questionnaire to select appropriate participants (i.e., adapted physical educators) for the present study. The participants, who reported their current duties as adapted physical educators or both general and adapted physical educators on the prescreening test, moved to the next step. In case of other work duties (e.g., special education, administrator), they were immediately guided to the end of the questionnaire and did not respond to the questionnaire.

The questionnaire packet was typed in Psychdata except for the cover letter which was electronically sent by a third person (i.e., organization staff) to the possible participants. When transferring the questionnaire into Psychdata, the seven constructs (i.e., behavioral intention, attitude toward behavior, subjective norm, perceived behavioral control, behavioral belief, normative belief, control belief) were placed in a random order. There were two steps in the randomization process. First, seven different questionnaires were constructed. In each questionnaire, constructs were manually typed by the investigator using a random order table. Second, a random assignment option was configured on the prescreening test. This option allowed for random assignment of the participants to one of the seven questionnaires after completing the prescreening test.

Construct Scoring Methods

Ajzen (2005) suggested two scoring methods be used to obtain the overall score for each construct based on the types of measures (i.e., direct or indirect). For direct measures that are behavioral intention, attitude toward behavior, subjective norm, and

perceived behavioral control, scores from multiple items were averaged and the mean score indicated an overall score for the constructs.

Further, for the three indirect measures (i.e., behavioral belief, normative belief, control belief), scoring methods were illustrated in Tables 4, 5, and 6. As mentioned earlier in this chapter, each belief construct comprised two subconstructs:

1. Behavioral belief: Behavioral belief strength and outcome evaluation
2. Normative belief: Normative belief strength and motivation to comply
3. Control belief: Control belief strength and control belief power

Each subconstruct contained six items that incorporate salient behavioral beliefs (e.g., outcomes), salient normative beliefs (e.g., important individuals), and salient control beliefs (e.g., barriers), respectively, identified in Phase I (see Tables 8, 9, and 10 in Chapter IV). For the behavioral belief construct, six salient beliefs (e.g., outcomes: improving physical fitness, increasing injury) of adapted physical educators with regard to teaching MVPA at least 50% of the time in my adapted physical education classes were determined and each belief was transformed to two items: one item for behavioral belief strength and another for outcome evaluation. For example,

1. Behavioral belief strength: Teaching MVPA at least 50% of the time in my adapted physical education classes would improve physical fitness of students with disabilities (behavioral belief: outcome 1): 1 = strongly agree, 7 = strongly disagree.

2. Outcome evaluation: Improving physical fitness of students with disabilities (behavioral belief: outcome 1) would be: 1 = extremely beneficial, 7 = extremely harmful.

Therefore, there were 12 items developed for the behavioral belief construct. More information about how to convert the salient beliefs of adapted physical educators into items was provided in Chapter III.

Each overall score from the belief construct was estimated by adapted physical educators based on the recommendations by Ajzen (2010). Behavioral belief was assessed by: (a) behavioral belief strength that refers to an adapted physical educator's belief about the probability of a given outcome of a behavior and (b) outcome evaluation that refers to an adapted physical educator's positive or negative evaluation of that outcome. An overall score for the behavioral belief was calculated by multiplying a behavioral belief strength score and an outcome evaluation score of each item together and summing the scores for the all beliefs items (see Table 4).

Table 4

Construct Scoring Methods for the Behavioral Belief Construct

Construct: Behavioral belief	
Formula:	Behavioral belief (BB) = $\sum b_i e_i \propto$ Attitude toward behavior (ATT)
Example:	Behavioral belief outcome (i) = improve their physical fitness levels) Behavioral belief strength (b) Teaching MVPA with students with disabilities would improve their physical fitness levels: Strongly agree: _1_:_2_:_3_(_4_):_5_:_6_:_7_: Strongly disagree

(continued)

	Outcome evaluation (e) Improving their physical fitness levels of students with disabilities would be: Extremely valuable: _1_:_2_:_3_:_4_:_5_:_6_:_7_: Extremely worthless
Scoring:	For this salient belief outcome (i = improve their physical fitness levels), 4 was scored in behavioral belief strength (b) and 3 was scored in outcome evaluation. 1. Calculate a score for each behavioral belief outcome. According to the formula above, b_i was multiplied by e_i so 12 was the score for this given salient belief outcome (b_i x e_i = 4 x 3 = 12). 2. Calculate scores for the other salient belief outcomes. Assume there were three salient belief outcomes (3i). In this example, 12 was the score for a single salient belief outcome (i = improve their physical fitness levels), there were 2 other scores for the belief outcomes such as i = increasing injury (assume, scored 6 for behavioral belief strength and 5 for outcome evaluation; 6 x 5 = 30) and i = increasing healthy lifestyle (scored 7 for behavioral belief strength and 7 for outcome evaluation; 7 x 7 = 49). 3. ∑ indicates summing the scores for all salient belief outcomes: (a) 12 for improving their physical fitness levels, (b) 30 for increasing injury, and (c) 49 for increasing healthy lifestyle. 4. These scores were summed (12+ 30 + 49) and were equal to 91 (which equals the overall score for behavioral belief).

Note. b = behavioral belief strength, e = outcome evaluation, i = salient belief outcome.

Normative belief was assessed by: (a) normative belief strength that refers to an adapted physical educator's belief about how others who are important or significant to him or her would think of him or her doing a behavior and (b) motivation to comply that refers to an adapted physical educator's belief about the evaluation of whether he or she complies with his or her important people's expectation of doing a behavior. An overall score for the normative belief was calculated in the same way as the behavioral belief by multiplying a normative belief strength score and a motivation to comply score of each and adding the scores for all the belief items (see Table 5 on the next page).

(Cont

Table 5

Construct Scoring Methods for the Normative Belief Construct

Construct: Normative belief	
Formula:	Normative belief (NB) = $\sum n_i m_i \propto$ Subjective norm (SN)
Example:	Salient social individual or group (i) = general physical educators Normative belief strength (n) General physical educators think that I should teach MVPA with students with disabilities: Strongly agree: _1_:_2_:_3_:_4_:_5_:_6_(_7_): Strongly disagree Motivation to comply (m) Generally speaking, I would do what general physical educators think I should do: Strongly agree: _1_:_2_:_3_(_4_):_5_:_6_:_7_: Strongly disagree
Scoring:	The scoring method was the same as in the behavioral belief. 1. n_i x m_i = 7 x 4 = 28 2. This score was then combined with the scores from the other items. (Assume 21 (3 x 7) for classroom teacher, 9 (3 x 3) for parents) 28 + 21 + 9 = 58 (which equals the overall score for normative belief).

Note. n = normative belief strength, M = motivation to comply, i = salient individuals or groups.

Control belief was measured by: (a) control belief strength that refers an adapted physical educator's belief about the presence of factors and (b) control belief power that refers to an adapted physical educator's evaluation of whether perceived factor will facilitate or inhibit him or her to perform a behavior. An overall score for the control belief was the combination of scores from the calculations of multiplying the control belief strength score and the control belief power score regarding each barrier. For an example of the calculations refer to the formula presented in Table 6 on the next page.

Table 6

Construct Scoring Methods for the Control Belief Construct

Construct: Control belief	
Fomula:	Control belief (CB) = $\sum c_i p_i \propto$ Perceived behavioral control (PBC)
Example:	Salient barrier (i) = a lack of equipment Control belief strength (c) There is a lack of equipment for teaching MVPA with students with disabilities: Strongly agree: _1_:_2_:_3_:_4_:_5_:_6_:_7_: Strongly disagree Control belief power (p) A lack of equipment would make it difficult for me to teach MVPA: Strongly agree: _1_:_2_:_3_:_4_:_5_:_6_:_7_: Strongly disagree
Scoring:	The scoring method was the same as in the behavioral belief. 1. c_i x p_i = 2 x 3 = 6 2. Assume scores from the other items regarding barriers were 42 (6 x 7) and 8 (4 x 2). 6 + 42 + 8 = 56 (which equals the overall score for control belief).

Note. c = control belief strength, p = control belief power, i = barrier.

Procedures

The questionnaire was disseminated to the population identified in the listservs of TAHPERD, NYS AHPERD, and NCPEID including the CAPE members except for those who have participated in the content validity process in Phase II. The questionnaire was disseminated in the indirect methods. The steps of the indirect method were: (a) contacting by email the staffs who managed the listserv of the organizations' members and (b) asking the staff to disseminate the questionnaire electronically to all members. For the questionnaire dissemination, the investigator provided the organization staffs the email

script (i.e., cover letter) embedded with a link to the questionnaire in PsychData (i.e., online survey software). The questionnaire was then disseminated by electronically sending the cover letter with the link for NYS AHPERD, and NCPEID including the CAPE members; and electronically sending the cover letter posted on periodical newsletter for TAHPERD members.

The potential participants were asked to read the brief introduction of the study and complete the questionnaire. The potential participants who were interested in participating in the questionnaire pressed the link to access the questionnaire in PsychData. As mentioned earlier in the Instrument Section in Phase III, the prescreening test was placed after the cover letter to select adapted physical educators and filter out other personnel groups such as general physical educators, health educators, dance instructors, coaches. The potential participants began the questionnaire after the prescreening. When the potential participants completed and submitted the questionnaire, they were considered study participants. Responses were stored in a PsychData account. All the steps of the questionnaire were anonymous and voluntary. The questionnaire was re-sent to all members after a 2-week interval as the second attempt to increase the number of the respondents (Miller & Keith, 1983). All members were used again because the questionnaire was anonymous so the respondents or the nonrespondents were not identified. Those who previously responded were asked not to proceed forward on the questionnaire.

Test-Retest Analysis

For the test-retest analysis, 35 adapted physical educators who represented the participants of this investigation (see Participant section, p. 66) were purposely selected. These adapted physical educators were not part of any of the Phases described in Chapter III and were not included in any other data analyses. At the first administration of the questionnaire, it was sent by a former TAHPERD adapted physical activity chair to the adapted physical educators electronically to assure anonymity. Once the adapted physical educators completed the questionnaire (i.e., 24 of the 35), it was returned to the third person's email account. At the second administration of the questionnaire, the same questionnaire was sent to the same group of 24 adapted physical educators 3 days after the first test was completed. Twenty of the 24 questionnaires were returned to the third person's email account when the adapted physical educators completed the questionnaire. Then the third person handed the completed questionnaires to the investigator.

Data Analysis

First, the raw data were checked to determine if there were any missing data and outliers. Once the missing data and outliers were cleaned (refer to Data Cleaning section in Chapter IV, pp. 88-89), the remaining data collected from the 7-point scales (1 = *strongly agree*, 7 = *strongly disagree*) were reversed; the scores from the scales were deducted by 8 to produce the reversed scores (1 = *strongly disagree*, 7 = *strongly agree*).

Second, prior to the data analysis, the assumption tests (i.e., linearity, normality distributed error, independent errors, homoscedasticity, multicollinearity) were performed

to determine if there were any violations for multiple regression which was a main statistical technique used for the present investigation. The violations of the assumptions for a specific statistical technique can limit the influential ability of the data from the participants to the population (Field, 2009).

Third, there were two reliability tests conducted to demonstrate internal consistency reliability and test-retest reliability. The internal consistency reliability was obtained for four direct measures; behavioral intention, attitude toward behavior, subjective norm, and perceived behavioral control constructs using a Cronbach's α reliability analysis (Cronbach, 1990). This reliability analysis is a statistical method that uses a correlation coefficient α value to examine internal consistency reliability (Cronbach). The value of .60 or above is considered acceptable for Cronbach's α (Nunnally, 1994).

The test-retest reliability was measured to determine if data from three indirect measures (i.e., behavioral belief, normative belief, control belief) used in the questionnaire were stable over time. Pearson product moment correlation coefficient between the test and the retest data was obtained for each belief construct and accepted if the value of coefficient was .6 or above (Chumney & Simpson, 2006). No internal consistency reliability was measured for the indirect measures because each belief construct consisted of the 6 salient beliefs and these beliefs may be inconsistent with each other. For example, in assessing behavioral beliefs, adapted physical educators might strongly agree about positive effects of teaching physically active class on the improvement of physical fitness levels of students with disabilities. However, they might strongly disagree on the positive

effect of teaching physically active class on the reduction of physical injuries by students with disabilities.

Fourth, path analysis (Dugard, Todman, & Staines, 2010) was used to determine the comparative strength of direct and indirect relationships among variables with the use of stepwise and simple multiple regressions. A stepwise multiple regression was used to determine whether predictive models (i.e., a set of direct measures of constructs) predicted behavioral intentions of the participants to teach MVPA at least 50% of the time in adapted physical education classes. Further, a series of simple linear regressions were performed to determine the effects of indirect measures of behavioral belief, normative belief, and control belief on the attitude toward behavior, subjective norm, and perceived behavioral control, respectively (Dugard, Todman, & Staines). In addition, the descriptive statistics were used to present the participant's demographic information and the overall score of each construct (i.e., behavioral intention, attitude toward behavior, subjective norm, perceived behavioral control, behavioral belief, normative belief, control belief) using means and standard deviations. All statistical analyses were conducted using SPSS Version 19.0 with the significant level set at .05.

CHAPTER IV

RESULTS

The purposes of this study were to: (a) determine adapted physical educators' salient beliefs about the behavior of teaching 50% of their class time devoted to moderate to vigorous physical activity (MVPA) to students with disabilities; (b) explore behavioral intention, attitude toward behavior, subjective norm, perceived behavioral control, control belief, behavioral belief, and normative belief of adapted physical educators with regard to teaching 50% of their class time devoted to MVPA to students with disabilities; (c) determine the relationships between behavioral intention, attitude toward behavior, subjective norm, perceived behavioral control, control belief, behavioral belief, and normative belief; (d) determine if attitude toward behavior, subjective norm, perceived behavioral control, control belief, behavioral belief, and normative belief will be able to predict adapted physical educators' intentions; (e) determine cognitive foundation of adapted physical educators' intentions to teach 50% of their class time devoted to MVPA to students with disabilities. According to the purposes of this investigation, three investigational phases were developed and implemented: (a) Phase I (Elicitation), (b) Phase II (Questionnaire Formulation), and (c) Phase III (Main Study). In this section, the results of each phase are presented in sequence.

Phase I (Elicitation)

The purpose of this phase was to identify adapted physical educators' salient behavioral beliefs, normative beliefs, and control beliefs about teaching MVPA at least 50% of their class with students with disabilities. Adapted physical educators were asked nine open ended questions to determine their salient beliefs.

Participant's Demographic Information

The questionnaire with the nine questions was electronically sent to 84 purposely selected adapted physical educators in an elementary, middle, and/or high school in the Dallas Fort Worth Metroplex, Texas. Twenty six adapted physical educators (*N* = 26) returned the questionnaire (return rate = 31%). The followings is the key demographic information of the participants (more detail is in Table 7 on the next page):

1. Participants were 22 female and 4 male adapted physical educators with an average age of 41.1 years (*SD* = 12.2), ranging from 25 to 64 years old.
2. Participants were White (84.6%) or Hispanic/Latino (7.7%).
3. Participants had a Master's degree (*n* = 22; 84.6%), a Bachelor degree (*n* = 3; 11.5%), or a Doctorate degree (*n* = 1; 3.8%).
4. Participants had taught in public education for an average of 14 years (*SD* = 11.2) and in adapted physical education for an average of 10.1 years (*SD* = 8.6).
5. Participants (*n* = 22; 84.6%) taught students in prekindergarten to 12th grade in urban or suburban areas.

6. Participants (*n* = 12; 46.2%) earned teacher's certificates in three fields (i.e., general physical education, adapted physical education, special education); while the other participants (*n* = 9; 34.6%) earned teacher's certificates in both the fields of general physical education and adapted physical education.

Table 7

Participant's Demographic Information in Phase I

Characteristics	Adapted physical educators (*N* = 26)
Gender	
Male	4
Female	22
Age (years)	
M (*SD*)	41.1 (12.2)
Range	25-64
Ethnicity	
White	22
Hispanic or Latino	2
Not provided	2
Education Level	
Bachelor	3
Master	22
Doctorate	1
Teaching Experience (years)	
Overall Teaching Experience (*M, SD*)	14 (11.2)
Range	2-37
Adapted Physical Education Only (*M, SD*)	10.5 (8.6)
Range	1-35
Teaching Level	
Pre K-12 grade	9
K-12 grade	13
Other (i.e., 1-12 grade, K & E, Pre K & E)	4
Geographical Teaching Location	
Rural	2
Suburban	16
Urban	6
Rural + Suburban	1
Rural + Suburban + Urban	1

(continued)

Certification	
GPE	3
GPE + APE	9
GPE + SE	1
APE + SE	1
GPE + APE + SE	12

Note. *M* = mean, *SD* = standard deviation, K = kindergarten, E = elementary school, GPE = general physical education, APE = adapted physical education, SE = special education.

The results of the content analysis for each belief construct (i.e., behavioral belief, normative belief, control belief) are presented in Tables 8, 9, and 10. The responses were sorted into categories of beliefs and rank ordered from the most mentioned to the least mentioned beliefs. The top 75% of the mentioned responses were determined as salient beliefs (Francis et al., 2004). For instance, in the results within the behavioral belief construct, the first six beliefs were considered salient behavioral beliefs because 75 % of 121 responses (i.e., the sum of the frequency) was 91 (121 x 75/100 = 91).

Behavioral Belief

A behavioral belief is defined as an individual's belief about the consequences of a behavior (for the present investigation, the behavior was referred to as "teaching MVPA at least 50% of the time in my adapted physical education classes"). Three opened ended questions were used to ask participants about the consequences of performing the behavior.

The adapted physical educators most often mentioned that six consequences (determined salient behavioral beliefs) occurred when teaching MVPA at least 50% of the time in adapted physical education classes (see Table 8 on the next page). These were: (a) increase physical fitness; (b) increase risk of fatigue, injury, or illness related to their

disabilities; (c) lead to healthier lifestyle and well-being; (d) influence on the affect domain of students (e.g., attitude, self-esteem, emotion, happiness); (e) less time for other goals and objectives on Individualized Education Program (IEP); and (f) increase the purposeful and successful participation of students with disabilities in community and home based activities.

Table 8

Results of Content Analysis for the Behavioral Belief Construct

Rank	Category of responses	Frequency	Cumulative number
1*	Increase physical fitness	28	28
2*	Increase risk of fatigue, injury, or illness related to their disabilities	18	46
3*	Lead to healthier lifestyle and well-being	16	62
4*	Influence on the affect domain of students (e.g., attitude, self-esteem, emotion, happiness)	14	76
5*	Less time for other goals and objectives on IEP	8	84
6*	Increase the purposeful and successful participation of students with disabilities in community and home based activities	8	92
7	Increase endurance	7	99
8	Influence on behavior (e.g., increase time of task, decrease negative behavior)	7	106
9	Increase MVPA levels	3	109
10	Positive effects on academic performance.	3	112
11	Cause negative behavior	3	115
12	Required to know about exercise	2	117
13	Demonstrate interests	2	119
14	Increased complaints	1	120
15	Cause undesired legality issue	1	121
		Sum = 121	

Note. * indicates the salient behavioral beliefs that were 75 % of the sum of all responses, IEP = individualized education program, MVPA = moderate to vigorous physical activity.

Normative Belief

A normative belief is referred to as an individual's perception of the most important people who approve or disapprove him/her to teach MVPA at least 50% of the class in adapted physical education classes. There were three open ended questions that were used to elicit adapted physical educators' normative belief (i.e., their most important people) when or if teaching MVPA at least 50% of the time in adapted physical education classes.

The most frequently mentioned individuals or groups who influenced the adapted physical educators to teach MVPA at least 50% of the time in adapted physical education classes were: (a) parents/guardians; (b) medical personnel (i.e., physicians, school nurses, physical therapists, occupational therapists); (c) classroom teachers; (d) general physical educators; (e) administrators; and (f) students with disabilities**.** These were considered salient normative beliefs of the adapted physical educators (see Table 9).

Table 9

Results of Content Analysis for the Normative Belief Construct

Rank	Category of responses	Frequency	Cumulative number
1*	Parents/guardian	28	28
2*	Medical personnel (i.e., physicians, school nurses, physical therapists, occupational therapists)	13	41
3*	Classroom teacher	12	53
4*	General physical educator	11	64
5*	Administrator	10	74
6*	Student with disabilities	10	84
7	Professional association	7	91

(continued)

8	Adapted physical educator	5	96
9	Paraeducator	4	100
10	Special educator	3	103
11	Coach	2	105
12	Partner's PE (Physical Education)	2	107
13	Autism specialist	1	108
14	Behavior specialist	1	109
15	School psychologist	1	110
16	Speech pathologist	1	111
17	Diagnostician	1	112
18	Caregiver	1	113
20	Center for Disease Control and Prevention	1	114
21	American Heart Association	1	115
		Sum = 115	

Note. * indicates the salient behavioral beliefs that were 75 % of the sum of all responses.

Control Belief

A control belief is defined as the perceived presence of factors that make it easy or more difficult for an individual to teach MVPA at least 50% of the time in adapted physical education classes. Three open ended questions were used to elicit information from adapted physical educators.

In this investigation, it was reported that the adapted physical educators believed there were 6 factors within the top 75% of the responses that facilitate or impede teaching MVPA at least 50% of the time in adapted physical education classes (see Table 10 on the next page). These six factors were: (a) support/assistant from school and family; (b) proper setting (e.g., adequate space, gymnasium accessibility, safety); (c) student's

disability (physical and cognitive limitation); (d) teaching strategies (class setup, routine, game, warm-up, and higher expectation); (e) equipment; and (f) student's motivation and attitude.

Table 10

Results of Content Analysis for the Control Belief Construct

Rank	Category of Control Belief	Frequency	Cumulative number
1*	Support/assistant from school and family	35	35
2*	Proper setting (e.g., adequate space, gymnasium accessibility, safety)	34	70
3*	Student's disability (physical and cognitive limitation)	21	96
4*	Teaching strategies (class setup, routine, game, warm-up, and higher expectation)	21	117
5*	Equipment	20	137
6*	Student's motivation and attitude	14	145
7	Class time and size	13	160
8	Student's medical prescription from doctors.	9	168
9	Having students with various types of disabilities in the same class	5	173
10	Freedom within the curriculum	3	178
12	Teacher's attitude	3	181
13	IEP (Individualized Education Program)	2	184
14	Student's behavior	2	186
15	Clothing	2	188
16	Communication	2	190
17	Schedule	1	192
18	Teaching students new skills	1	193
19	Student's fatigue	1	194
20	Student's lack of social skills	1	195

(continued)

21	Masters	1	196
22	Experience	1	197
23	Smaller caseload	1	198
24	Attitude of others	1	199
25	Complaints	1	200
26	Funding	1	201
27	Failure is not readily encouraged	1	202
28	Carrying equipment	1	203
		Sum = 203	

Note. * indicates the categories at or above 75% of the sum of all responses.

Phase II (Questionnaire Formulation)

Phase II involved the development of a questionnaire with the seven constructs (i.e., behavioral intention, attitude toward behavior, subjective norm, perceived behavioral control, behavioral belief, normative belief, control belief) of the theory of planned behavior (Ajzen, 2006). The results from Phase I were used to formulate behavioral belief, normative belief, and control belief construct items. Further, items for behavioral intention, attitude toward behavior, subjective norm, and perceived behavioral control constructs were developed based on the questionnaire used in the past studies by Oh et al., (2010); Rizzo, So, and Tripp (2007).

Revision of the Questionnaire

Three groups of content experts (i.e., professors, adapted physical education doctoral students, practicing adapted physical educators) were asked to review and edit the draft questionnaire. Editorial and grammatical changes (e.g., vocabulary, phrasing, formatting, writing style) mainly in instructions and questionnaire items were provided

by the experts in addition to suggestions about the overall questionnaire design (see Appendix E for more information on the reviewer comments). All feedback provided by reviewers were reviewed independently by the investigator and his dissertation chairperson. The chairperson submitted his responses to the investigator who reviewed the feedback. If both agreed, the information was automatically accepted and incorporated in the revision of the questionnaire. Any feedback that was not supported by the two, were discussed. Lack of independent agreement occurred 19 times out of the 89 feedback statements evaluated and none was eliminated.

Content Validation

When this revision was completed, the questionnaire was sent to a panel of five content experts to quantitatively determine the content validity of the questionnaire using Content Validity Index (CVI). The experts were asked to read each of the items in the questionnaire and indicate whether each construct measured by the items was not relevant, somewhat relevant, quite relevant, and highly relevant. The CVI value was calculated by dividing the number of experts who rated 3 (i.e., quite relevant) or 4 (i.e., highly relevant) by the total number of experts (N = 5). The acceptable CVI value was a minimum of .80 (Lynn, 1986). Based on the results, all items were determined to be content valid indicating a 1.0 CVI value (see Appendix F).

Phase III (Main Study)

Next, the purpose of Phase III was to examine the theory of planned behavior constructs (i.e., behavioral intention, attitude toward a behavior, subjective norm,

perceived behavioral control, behavioral belief, normative belief, control belief) in adapted physical educators about teaching MVPA at least 50% of their class time. The results of data analyses were presented in the following sections: (a) Data Cleaning; (b) Data Computations; (c) Assumption Tests; (d) Prescreening Test; (e) Reliability Tests; (f) Participant's Demographic Information; (g) Descriptive Statistics of the Direct Measures; (h) Correlations Between Constructs; (i) Model Fit of Direct Measures; (j) Contributions of Direct Measures; (k) Contributions of Indirect Measures; and (l) Cognitive Foundation.

Data Cleaning

Once the data collection was complete, raw data were downloaded from Psychdata account to investigator's personal laptop in a SPSS format. Psychdata provided the data coded by types, names, and labels of variables in a predetermined format based on the questionnaire design. The raw data were then cleaned to assure usable, reliable, and valid for data analyses (Portney & Watkin, 2009). The data cleaning involved determining missing data and replacing missing data. The data from 138 participants were initially screened using descriptive statistics and histogram (i.e., frequency, mean, standard deviation, maximum and minimum value, range) to identify any miscoded and missing data. Based on the results of the initial screening, the data from 15 participants were determined unusable and eliminated from the data set because more than half of items in the questionnaire were incomplete and/or the questionnaire were taken by an unqualified personnel (e.g., faculty in higher education, paraeducator). One hundred

twenty three data cases remained for use in the further data analyses (Portney & Watkin, 2009).

In this data set, there were 41 missing fields of the data across 19 data cases detected for the consideration of whether or not replacement was needed. A field is referred to as each individual score or value and several fields of data compose a case (Portney & Watkin, 2009). The missing fields of data were replaced with the mean of sample for each variable because the missing fields were determined to be a random pattern (Portney & Watkin). Further, comparisons of each variable which contained a missing field(s) were performed between data sets of the variables with and without mean replacement using a series of *t* tests. Based on the analyses no significant differences were detected.

After replacing missing fields, the code of a reversed wording item on a 7-point scale was reversed back to the same positive or negative directional scale as the other items. The reversed item was as follows: it will not be easy for me to teach MVPA at least 50% of the time in my adapted physical education classes (1 = *strongly disagree*, 7 = *strongly agree*). Answering a value of 7 indicated that participants believed that it was not easy to teach MVPA at least 50% of the time in my adapted physical education classes. However, in other items of the same construct (i.e., perceived behavioral control), for example, asking if I wanted to, I am confident I could teach MVPA at least 50% of the time in my adapted physical education classes (1 = *strongly disagree*, 7 = *strongly agree*) 7 indicated a strong agreement on this statement.

Data Computations

When the data cleaning was complete, variables were computed to determine an overall score of each direct or indirect measure of constructs (i.e., behavioral intention, attitude toward behavior, subjective norm, perceived behavioral control, behavioral belief, normative belief, control belief). This is because a single score for each construct that was assessed in multiple items was necessary for the predictive data analyses that are described later in this chapter. Ajzen (2006) suggested two scoring methods be used to obtain the overall score for each construct based on types of measures (i.e., direct or indirect). For the direct measures (i.e., behavioral intention, attitude toward behavior, subjective norm, perceived behavioral control), scores from multiple items were averaged and the mean score indicated an overall score for the constructs. Further, for the three indirect measures (i.e., behavioral belief, normative belief, control belief), scoring methods were provided in Tables 4, 5, and 6 in Chapter III.

Assumption Tests

According to Field (2009), numerous assumptions must be met in order to generalize the findings from the multiple regression analyses. In the present investigation, the assumptions for two major statistical methods (i.e., multiple regression and correlation) were examined prior to the data analyses (Field).

Outlier. In general, 95% of cases were to have a standard error within ± 2 standard deviations (Field, 2009). In other words, 5% of cases were likely to be outside of the cut-off. In the present investigation, 5% of 123 cases (data from 123 adapted physical

educators) were approximately six cases. Based on the casewise diagnostic analysis using SPSS 19.0, six cases outside of ± 2 standard deviations were detected in the data set and were needed for further analyses to determine if they were considered an outlier(s). Cook distance, Mahalanobis distance, and centered leverage values were used. A case was considered an outlier(s) if the: (a) Cook distance value was greater than 1; (b) Mahalanobis distance value was greater than 15; and (c) centered leverage value was greater than 0.098 (Calculation: [a number of predictors (k) + 1] / sample size x 3 = [3 + 1]/123 x 3 = 0.098). Based on the outlier examination results, one case was identified and excluded for further data analyses (Mahalanobis distance = 17.87). Therefore, 122 cases were used in the data analyses.

Multicollinearity. The assumption of no multicollinearity was met. The variance inflation factor (VIF) was 1.46, 1.43, and 1.10, respectively. It raised a concern if the VIF was greater than 10 and the mean of those three values were greater than 1.0. Further, a tolerance value was 0.68, 0.69, and 0.90, respectively and indicated no concern for multicollinearity. It would have been problematic if the tolerance value was less than 0.2.

Homoscedasticity. The scatter plots (standardized predicted values of the dependent variable by standardized residuals) for each predictor were used to determine whether or not homoscedasticity was met. Based on the illustration of the plots, the values evenly spread out. This indicated this assumption was met.

Independent errors. The assumption of independent errors was met because Durbin-Watson statistics indicated 1.87 which also was close to 2. The assumption would have been violated if Durbin-Watson statistic was less than 1 or more than 3.

Normality distributed error. A model of errors **(**i.e., differences between the model and the observed data**)** were determined to be a normal distribution. In the histogram and the normal probability plot generated by SPSS 19.0, the curves were in a normal distribution shape and the values of the plots were laid over a straight line. The assumption would have been violated if the values of the plots are not illustrated in a straight line.

Linearity. The scatter plots (standardized predicted values of the dependent variable by standardized residuals) for the Homoscedasticity assumption were used again to determine the linearity. Based on the visual inspection of the plots, the dispersions of the values were even and showed linear relationships between the predictors.

Prescreening Test

The invitation letter (i.e., cover letter) embedded with a link to the questionnaire was sent to all members including Certified Adapted Physical Educators (CAPEs) of three national and state level organizations that focus on physical education with individuals with disabilities: (a) Texas Association for Health, Physical Education, Recreation and Dance (TAHPERD); (b) New York State Association for Health, Physical Education, Recreation, and Dance (NYS AHPERD); and (c) National Consortium for Physical Education for Individuals With Disabilities (NCPEID). After the members clicked

the link to start the questionnaire, the prescreening test was provided before the questionnaire began. This was because the investigator did not have access to listservs of the members and not able to select qualified participants (i.e., adapted physical educators) from the listserv. This enabled the investigator to filter out individuals who did not meet the criteria of the target participants in this phase of the investigation. Further, the members were considered potential participants until they accessed to the questionnaire online, passed the qualification test (prescreen test), and were committed the completion and submission of the questionnaire. In the anonymous questionnaire, the return of his or her completed questionnaire was considered his or her informed consent to be a participant in the investigation.

There were 233 potential participants (128 adapted physical educators and 78 adapted physical educators who also taught general physical education, and 27 others who were not one of these but identified as, for example, special educators or administrators) who completed the prescreening test but not the main questionnaire. Of those, 206 potential participants (128 adapted physical educators who only taught in an adapted physical education environment and 78 adapted physical educators who also taught in general physical education environment) were qualified through the prescreening test and proceeded to the main questionnaire. There were 138 who completed all or part of the questionnaire and submitted the questionnaire to the investigator's Psychdata account. Individuals who were identified as in 'others category'

who were not an adapted physical educator or a combination of a general and an adapted physical educator data were excluded for further data analyses.

Of 138 participants, 122 were finally selected and their responses data were determined for data analyses after the data cleaning (i.e., eliminating uncompleted questionnaire and outliers) was conducted as described earlier in this chapter. The return rate was unable to be estimated because a total number of organization members were unknown (the investigator sent a request organizations for the membership size two times but received no reply from NYS, AHPERD, and NCPEID).

Reliability Tests

Two types of reliability tests were performed to determine the consistency of the instrument (i.e., questionnaire) across the direct measures of items assessing a given construct and the stability of the indirect measures of the items over time. These were the tests for the internal consistency reliability and the test-retest reliability. Internal consistency reliability was estimated for the directly measured constructs (i.e., behavioral intention, attitude toward behavior, subjective norm, perceived behavioral control). However, this reliability was not considered an appropriate estimation for the indirectly measured constructs (i.e., behavioral belief, normative belief, control belief) because within a given construct there may be numerous beliefs that are inconsistent with each other. For example, the participants may favorably believe in one outcome (e.g., improving physical fitness) of teaching MVPA; however, at the same time they may unfavorably believe in the other outcomes (e.g., increasing injuries and reducing time to

develop other goals or objectives). Therefore, test-retest reliability was performed for the indirect measures.

Internal consistency reliability. Internal consistency reliability was established in Cronbach's alpha coefficients (Cronbach, 1990). The coefficients were .82 for behavioral intention; .96 for attitude toward behavior; .94 for subjective norm; and .64 for perceived behavioral control. These results indicated that the instrument items were acceptable (above 0.6) to reliably measures for the constructs of interest (Nunnally, 1994).

Test-retest reliability. The results of the correlation analysis indicated that the questionnaire was stable to gather data over time. The acceptable range of the coefficient level was .6 or above (Chumney & Simpson, 2006). The correlation coefficient of each belief construct in the present investigation was: .71 for behavioral belief; .63 for normative belief; and .73 for control belief.

Participant's Demographic Information

The participants were 122 adapted physical educators (Female = 89, Male = 33; see Table 11 on the next page) from 22 states; but primarily in Texas, California, and New York (see Appendix G). The age of the participants were, on average, 45.75 years old (*SD* = 11.09) and ranged from 22 to 65 years old. The vast majority (*n* = 112) were White while a few were other ethnicities (i.e., Hispanic or Latin, African American, American Indian, Asian American).

The participants had, on average, more than 10 years of teaching experience in adapted physical education (*M* = 13.60, *SD* = 9.18) and general physical education

(*M* = 10.39, *SD* = 10.10). The majority of the participants (*n* = 80) earned two or more teaching certifications in general physical education, adapted physical education, and/or special education. The teaching levels reported were: all education levels (e.g., prekindergarten to high school or more; *n* = 59); one specific education level (e.g., elementary only; *n* = 47); and more than one education level but not all (e.g., prekindergarten to middle school; *n* = 13).

Table 11

Participant's Demographic Information in Phase III

Characteristics	Adapted Physical Educators (*n* = 122)
Gender	
Male	33
Female	89
Age (years)	
Mean (*SD*)	45.75 (11.09)
Range	22-65
Ethnicity	
Caucasian	112
Hispanic or Latino	3
African American	2
American Indian	1
Asian American	1
Other (i.e., refuse to state or missing)	3
Education level	
Bachelor	29
Master	85
Doctorate	5
Other	3
Certification	
GPE + APE or GPE + APE + more (i.e., SE)	80
GPE only or GPE + more	29
APE only or APE + more	11
Other	2

(continued)

Teaching experience (years)	
Adapted Physical Education (*M, SD*)	13.60 (9.18)
Range	1-40
General Physical Education (*M, SD*)	10.39 (10.10)
Range	0-40
Teaching level	
Elementary	28
Middle	9
High	10
More than one education level but not all	13
Pre K to12 or more (i.e., 3 - 21)	59
Other	3

Note. *M* = mean, *SD* = standard deviation, K = kindergarten, GPE = general physical education, APE = adapted physical education, SE = special education.

Descriptive Statistics for the Direct Measures

Direct measures of behavioral intention, attitude toward behavior, subjective norm, and perceived behavioral control were assessed in a scale of 1 (*strongly disagree*) to 7 (*strongly agree*) with the exception of attitude toward behavior (an adjective scale was used: e.g., 1 = *extremely harmful*, 7 = *extremely beneficial*). Each measure was designed to assess a given construct regarding the behavior (i.e., teaching MVPA at least 50% of the time in their adapted physical education classes). The descriptive statistics were performed to produce the mean, standard deviation, range of each item (see Table 12 on the next page). An overall score of each construct was calculated by averaging the combined mean scores of items in a given construct.

Based on the results, the participants demonstrated a strong behavioral intention to teach MVPA at least 50% of the time in their adapted physical education classes (overall behavioral intention = 5.62). It was reported that they had intentions and willingness of performing this behavior (*M* = 5.50, *M* = 5.75, respectively). Further,

overall the participants expressed a positive attitude toward teaching MVPA at least 50% of their class time (the overall score mean was 5.81). Based on the results of the subjective norm, the participants perceived social expectation when teaching MVPA at least 50% of their class time (overall score mean = 4.51). Based on the results of the perceived behavioral control, the overall score mean was 5.01 which indicated that the participants had perceived confidence and control over teaching MVPA at least 50% of the class time.

Table 12

Descriptive Statistics for the Behavioral Intention, Attitude Toward Behavior, Subjective Norm, and Perceived Behavioral Control Constructs

Items	*M*	*SD*	Range
Behavioral intention			
I intend to teach MVPA at least 50% of the time in my adapted physical education classes:	5.50	1.43	2-7
I would be willing to teach MVPA at least 50% of the time in my adapted physical education classes:	5.75	1.36	1-7
	Overall behavioral intention* = 5.62		
Attitude toward behavior			
Teaching MVPA at least 50% of the time in my adapted physical education classes would be:			
Extremely beneficial	5.81	1.14	2-7
Extremely good	5.88	1.17	1-7
Extremely useful	5.75	1.15	2-7
	Overall attitude* = 5.81		

(continued)

Subjective norm			
Most people who are important to me think that I should teach MVPA at least 50% of the time in my adapted physical education classes:	4.40	1.79	1-7
People who are important to me would want me to teach MVPA at least 50% of the time in my adapted physical education classes:	4.61	1.70	1-7
	Overall subjective norm*	=	4.51
Perceived behavioral control			
If I wanted to, I am confident I could teach MVPA at least 50% of the time in my adapted physical education classes:	5.47	1.63	1-7
It will not be easy for me to teach MVPA at least 50% of the time in my adapted physical education classes:	4.32[a]	2.05	1-7
It is mostly up to me whether or not I teach MVPA at least 50% of the time in my adapted physical education classes:	5.23	1.88	1-7
	Overall perceived behavioral control* =		5.01

Note. * Overall scores were the results of the calculation: the mean scores of items were combined and the resulting score was divided by the number of items in a given construct, [a] the score was reversed because the item was negative. BI = behavioral intention, M = mean, SD = standard deviation.

Correlations Between Constructs

A Pearson product moment correlation analysis was performed to determine the correlation coefficients that were used to determine the relationships between theory of planned behavior constructs (i.e., behavioral intention, attitude toward behavior, subjective norm, perceived behavioral control, behavioral belief, normative belief, control belief; see Table 13 on the next page). There were positive significant relationships between behavioral intention and the following constructs ($p < .05$): (a) attitude toward behavior ($r = .70$); (b) subjective norm ($r = .55$); (c) perceived behavioral

control (r = .41); (d) behavioral belief (r = .64); and (e) normative belief (r = .45). These results indicated that the more favorable attitude toward the behavior (i.e., teaching MVPA at least 50% of the time in adapted physical education classes) are held, the more the perceived social expectation to perform the behavior, the more the perceived control over conducting the behavior, the stronger the beliefs about the outcomes of the behavior, the more the beliefs about the expectations of the referent individuals, the stronger the behavioral intention was formed. Further, among the significant relationships, the behavioral intention was highly correlated to attitude toward behavior and behavioral belief.

Table 13

Correlation Coefficients(Pearson) Between the Seven Constructs

	BI	ATT	SN	PBC	BB	NB	CB
BI	–					.	
ATT	.70*	–					
SN	.55*	.55*	–				
PBC	.41*	.33*	.25*	–			
BB	.64*	.71*	.48*	.24*	–		
NB	.45*	.43*	.51*	.15	.31*	–	
CB	-.15	-.19*	-.17	-.38*	-.08	-.01	–

Note. *p < .05, BI = behavioral intention, ATT = attitude toward behavior, SN = subjective norm, PBC = perceived behavioral control, BB = behavioral belief, NB = normative belief, CB = control belief.

In addition, the correlations of attitude toward behavior, subjective norm, and perceived behavioral control with the cognitive foundation of behavioral belief, normative belief, and control belief, respectively, were examined to validate the belief constructs of theory of planned behavior. The coefficients reported were statistically

significant and indicated the relationships between (a) attitude toward behavior and behavioral belief ($r = .71$, $p < .05$); (b) subjective norm and normative belief ($r = .51$, $p < .05$); and (c) perceived behavioral control and control belief ($r = -.38$, $p < .05$). The results conformed to the theory of planned behavior. The more perceived barriers the less control over the behavior.

Model Fit of Direct Measures

A stepwise multiple regression analysis was performed to determine whether predictive models (i.e., a set of constructs) predicted behavioral intention of the participants to teach MVPA at least 50% of the time in adapted physical education classes. The stepwise multiple regression analysis revealed three predictive models (see Table 14 on the next page): (a) Model 1 (attitude toward behavior x behavioral intention); (b) Model 2 (attitude toward behavior and perceived behavioral control x behavioral intention); and (c) Model 3 (attitude toward behavior, perceived behavioral control, and subjective norm x behavioral intention). Model 1 significantly predicted the behavioral intention, $F(1, 120) = 112.085$, $p < .05$ and the attitude toward behavior accounted for 48.3% of the variance in the behavioral intention. Further, Model 2 significantly improved its ability to predict the behavioral intention, $F(1, 119) = 68.47$, $p < .05$. Inclusion of the attitude toward behavior and the perceived behavioral control in Model 2 accounted for an additional 5.2% of the variance in behavioral intention.

Table 14

Summary of Models

Model	F	R	R^2	ΔR^2	*Change Statistics*		
					F change	*df*	*residual*
1. ATT → BI	112.09*	.695	.483	.483	112.09*	1	120
2. ATT + PBC → BI	68.47*	.731	.535	.052	13.33*	1	119
3. ATT + PBC + SN → BI	51.85*	.754	.569	.034	9.19*	1	118

Note. *p < .05, Dependent variable = behavioral intention (BI), ATT = attitude toward behavior, SN = subjective norm, PBC = perceived behavioral control. $\Delta R^2 = R^2$ change.

Model 3 was also a significant predictor of behavioral intention, $F(1, 118) = 51.85$, $p < .05$. A set of the attitude toward behavior, the perceived behavioral control, and the subjective norm accounted for an additional 3.4% of the variance in the behavioral intention. Based on the portion of the variances explained by predictors, Model 3 was determined the best model fit to predict the behavioral intention of the participants to teach MVPA at least 50% of the time in adapted physical education classes. A total 56.9% of the variance in the behavioral intention was explained by the predictors of the attitude toward behavior, the perceived behavioral control, and the subjective norm in Model 3.

Contributions of Direct Measures

The results in Model 3 were also used to determine the effects of direct measures of constructs (i.e., attitude toward behavior, subjective norm, perceived behavioral control) on the behavioral intention of the participants to teach MVPA at least 50% of the time in adapted physical education classes. All of the direct measured constructs

(i.e., attitude toward behavior, subjective norm, perceived behavioral control) were significant predictors of behavioral intention, $t(118) = 7.06$, $p < .001$; $t(118) = 3.39$, $p < .05$; and $t(118) = 3.03$, $p < .05$, respectively. The relative importance of the predictors was also determined using standardized beta values (labeled as Beta or β; see Table 15). Based on the results, the attitude toward behavior had the most contribution toward predicting the behavioral intention (β = .52) when the effects of perceived behavioral control and subjective norm were held constant. Further, perceived behavioral control (β = .22) and subjective norm (β = .22) contributed evenly to the predictive model when the other predictor's effects were controlled.

Table 15

Effects of the Direct Measures on the Behavioral Intention

Predictors	*b*	*SE*	β	*t*	*F*	*R*	R^2
Model 3							
ATT	0.60	0.09	0.52	7.06*			
PBC	0.20	0.06	0.22	3.39*	51.85*	.754	.569
SN	0.17	0.06	0.22	3.03*			

Note. *$p < 0.05$, Dependent variable = behavioral intention (BI), ATT = attitude toward behavior, SN = subjective norm, PBC = perceived behavioral control.

Contributions of Indirect Measures

According to theory of planned behavior, the indirect measures of the belief constructs are determinants of attitude toward behavior, subjective norm, and perceived behavioral control (Ajzen, 2010). Specifically, behavioral belief determines attitude toward behavior; normative belief determines subjective norm; and control belief

determines perceived behavioral control. In order to test this theory assumption, a series of linear regressions was conducted for each belief construct with the corresponding construct (see Table 16).

Based on the results, the behavioral belief significantly affected the attitude toward behavior, $F(1, 120) = 01$, $p < .05$ and accounted for 50% of the variance in the attitude toward behavior. The normative belief also significantly influenced the subjective norm, $F(1, 120) = 01$, $p < .05$ and explained 26% of the variance in the subjective norm. Further, the control belief was a significantly influential factor to the perceived behavioral control accounting for 15% of the variance in the perceived behavioral control, $F(1, 120) = 01$, $p < .05$. However, it appeared that the control belief and the perceived behavioral control had a negative relationship.

Table 16

Effects of the Indirect Measures on the Corresponding Direct Measures

	b	*SE*	β	*t*	*F*	*r*	r^2
BB → ATT	0.02	0.002	0.71	10.88*	0.01*	.70	.50
NB → SN	0.02	0.002	0.51	6.54*	0.01*	.51	.26
CB → PBC	-0.01	0.002	-0.38	-4.52*	0.01*	-.38	.15

Note. *$p < 0.05$, ATT = attitude toward behavior, SN = subjective norm, PBC = perceived behavioral control, BB = behavioral belief, NB = normative belief, CB = control belief.

Based on the analyses of the multiple regression and linear regressions, the path diagram was illustrated to understand the influential relationships between the constructs (see Figure 2 on the next page). The standardized beta values were used in the path diagram.

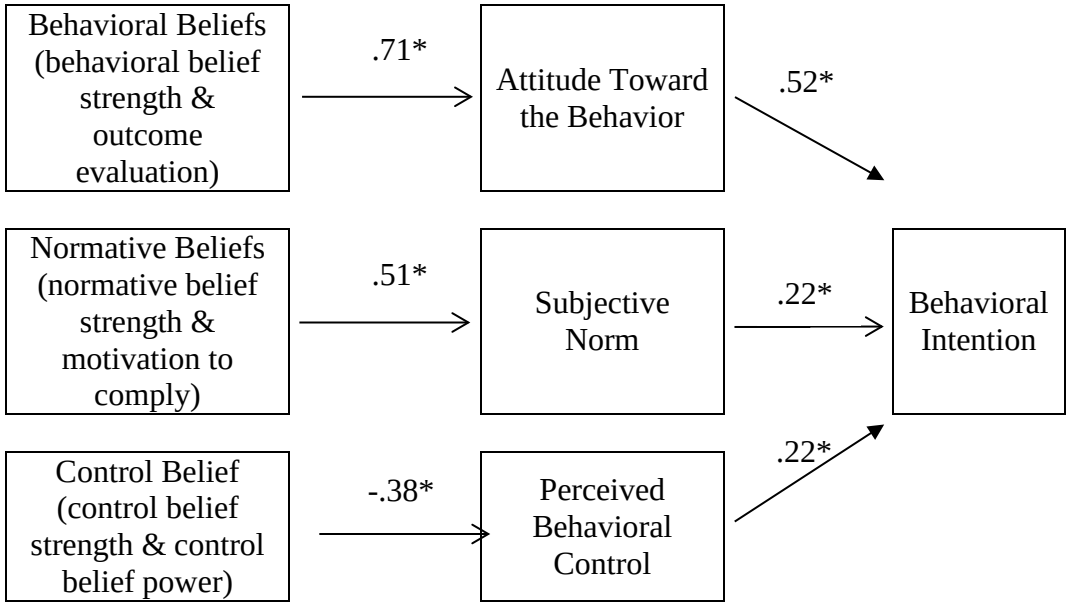

Figure 2. Path Diagram of Indirect and Direct Measures Related to Behavioral Intention. * $p < .05$.

Cognitive Foundation

To understand the cognitive foundation of the adapted physical educators' intentions to teach MVPA at least 50% of the time in adapted physical education classes, each belief in behavioral belief, normative belief, and control belief constructs was examined in their relationship to the behavioral intention. Pearson product moment correlations were conducted to identify the significant relationships between beliefs and behavioral intention. The results are provided in Tables 17, 18, and 19.

Behavioral belief. Behavioral belief was determined by a combination of the behavioral belief strength (7-point scale; 1 = *strongly disagree*, 7 = *strongly agree*) and the evaluation of outcomes of teaching MVPA at least 50% of the time in adapted

physical education classes (e.g., improving physical fitness of students with disabilities) measured by 7-point adjective scale (1 = *extremely worthless*, 7 = *extremely valuable*). These possible outcomes were identified in Phase I and infused into the questionnaire during the Phase II. Based on the results of descriptive statistics (see Table 17), the participants believed that teaching MVPA at least 50% of the time in adapted physical education classes would improve the physical fitness of students with disabilities (M = 6.21) and improve the level of physical fitness of students with disabilities would

Table 17

Descriptive Statistics and Correlation of the Behavioral Beliefs With the Behavioral Intention Construct

	Behavioral belief strength (b)	Outcome evaluation (e)	b_ie_i	*r*
	M (*SD*)	*M* (*SD*)	*M* (*SD*)	b_ie_i with intention
Teaching MVPA at least 50% of the time would . . .:				
Improve physical fitness of students with disabilities	6.21 (0.99)	6.37 (0.87)	39.95 (9.37)	.66*
Lead students with disabilities to a healthier lifestyle	5.84 (1.31)	6.50 (0.76)	38.43 (10.61)	.54*
Increase risk of fatigue, injury, or illness related to students' disabilities	4.34 (1.81)	3.46 (2.24)	16.06 (13.98)	.11
Increase the purposeful and successful participation of students with disabilities in community and home based activities	5.44 (1.36)	6.48 (0.77)	35.54 (10.63)	.46*

(continued)

Increase the amount of time on goals and objectives related to physical activities on an IEP of students with disabilities	4.78 (1.73)	5.64 (1.37)	27.85 (13.68)	.40*
Influence the affective domain (i.e., attitude, self-esteem, emotion) of students with disabilities	5.68 (1.27)	6.37 (0.83)	36.68 (10.80)	.61*
				Sum(∑) = 194.51

Note. *p < .05, MVPA = moderate to vigorous physical activity, IEP = individualized education program, b_ie_i = behavioral belief strength x outcome evaluation (belief strength was multiplied by outcome evaluation for each participant and then the scores for all participants were averaged and present in this table).

have been valuable (*M* = 6.37). The participants also believed that teaching MVPA at least 50% of the time in adapted physical education classes would positively lead students with disabilities to a healthier lifestyle (*M* = 5.84); increase the purposeful and successful participation of students with disabilities in community and home based activities (*M* = 5.44); increase the amount of time on goals and objectives related to physical activities on an IEP of students with disabilities (*M* = 4.78); and influence the affective domain (i.e., attitude, self-esteem, emotion) of students with disabilities (*M* = 5.68). Further, these outcomes were believed to be valuable (mean scores of the outcome evaluations were ranged between 5.64 and 6.50). On the other hand, the participants had negative beliefs in the following consequence: increase risk of fatigue, injury, or illness related to students' disabilities (*M* = 4.34). Further, the evaluation of this consequence reported was also negative (*M* = 3.46).

Based on the results from the correlation analysis, there were numerous outcomes of the behavior (i.e., teach MVPA at least 50% of the time in adapted physical education classes) which were associated with the behavioral intentions of adapted physical educators. The correlation coefficient value was considered weak if ranging between .1 and .3, moderate if ranging between .3 and .5, and strong if ranging between .5 and higher (Cohen, 1988). The significantly positive correlating factors to the behavioral intention were: (a) improving physical fitness of students with disabilities (strong); (b) leading students with disabilities to a healthier lifestyle (strong); (c) increasing the purposeful and successful participation of students with disabilities in community and home based activities (moderate); (d) increasing the amount of time on goals and objectives related to physical activities on an IEP of students with disabilities; (e) increasing the amount of time on goals and objectives related to physical activities on an IEP of students with disabilities (moderate); and (f) influencing the affective domain (i.e., attitude, self-esteem, emotion) of students with disabilities (strong). In other words, the stronger an adapted physical educator's belief regarding these behavior outcomes, the more intention toward teaching MVPA at least 50% of the time in adapted physical education classes.

Normative belief. Normative belief consisted of normative belief strength and motivation to comply with the referent individuals. These two subconstructs were multiplied and the scores for each referent individual were summed to determine subjective norm of theory of planned behavior.

Based on the results, the participants believed that the expectations of following referent individuals were influential in teaching MVPA at least 50% of the class time and rated it slightly above a neutral belief (4 = neutral): classroom teacher (*M* = 4.30); general physical educator (*M* = 4.76); administrator (*M* = 4.25); parents/guardian (*M* = 4.37); and medical personnel (i.e., physician, nurse, physical therapy, occupational therapy; *M* = 4.69); whereas, the perceived expectation of my students with disabilities (*M* = 3.74) was rated slightly below 4 (see Table 18).

Table 18

Descriptive Statistics and Correlation of the Normative Beliefs With the Behavioral Intention Construct

	Normative belief strength (n)	Motivation to comply (m)	$n_i m_i$	*r*
	M (*SD*)	*M* (*SD*)	*M* (*SD*)	$n_i m_i$ with intention
When teaching MVPA at least 50% of the time, the following individual were important:				
Classroom teacher	4.30 (1.73)	2.80 (1.71)	13.04 (10.97)	.26*
General physical educator	4.76 (1.80)	3.75 (1.83)	18.95 (13.22)	.37*
Administrator	4.25 (1.66)	4.42 (1.66)	19.16 (11.75)	.31*
My students with disabilities	3.74 (1.58)	3.80 (1.88)	15.28 (11.69)	.35*
Parents/guardians	4.37 (1.52)	4.46 (1.32)	20.23 (10.59)	.39*

(continued)

Medical personnel (i.e., physician, nurse, physical therapy, occupational therapy)	4.69 (1.70)	5.31 (1.40)	25.50 (12.03)	.46*
				Sum(∑) = 112.16

Note. *p < .05, MVPA = moderate to vigorous physical activity, $n_i m_i$ = normative belief strength x motivation to comply (belief strength was multiplied by motivation to comply for each participant and then the scores for all participants were averaged).

In addition, the referent individuals, who the participants were motivated to comply, were administrator (*M* = 4.42), parents/guardian (*M* = 4.46), and medical personnel (*M* = 5.31). In contrast, classroom teachers (*M* = 2.80), general physical educators (*M* = 3.75), and my students with disabilities (*M* = 3.80) were rated below 4 which indicated that the participants disagreed to comply with these individuals.

Numerous normative beliefs of adapted physical educators were also significantly correlated with the behavioral intention to teach MVPA at least 50% of the time in adapted physical education classes. The weak correlation was identified for classroom teacher and the moderate correlations for: (a) general physical educator; (b) administrator; (c) my student with a disability; (d) parents/guardian; and (e) medical personnel. Adapted physical educators were likely to hold higher intentions to teach MVPA at least 50% of the time in adapted physical education classes if those individuals held stronger expectation of them to teach MVPA at least 50% of their class time.

Control belief. Control belief was derived by multiplying control belief strength with control belief power. Each control belief regarding the presence of the barrier to teach MVPA at least 50% of the time in adapted physical education classes were summed to determine perceived behavioral control (see Table 19 on the next page).

Table 19

Descriptive Statistics and Correlations of the Control Beliefs With the Behavioral Intention Construct

	Control belief strength (c)	Control belief power (p)	c_ip_i	*r*
	M (*SD*)	*M* (*SD*)	*M* (*SD*)	c_ip_i with intention
When teaching MVPA at least 50% of the time, the following factors were present:				
Lack of equipment	3.98 (2.06)	4.06 (2.13)	18.82 (15.65)	-.09
Lack of support	4.28 (1.95)	4.65 (1.96)	21.46 (14.58)	-.08
Students' physical and cognitive limitations related to disabilities	4.86 (1.73)	4.71 (1.84)	25.01 (14.14)	-.23*
Students' lack of motivation and negative attitude	4.23 (1.86)	4.55 (1.81)	21.31 (14.27)	-.17
Inappropriate environmental settings (i.e., space, safety, gymnasium availability)	4.06 (2.03)	4.65 (2.05)	21.22 (15.22)	-.04
Lack of effective teaching strategies	2.97 (1.71)	3.86 (2.05)	12.40 (10.50)	-.09
				Sum(∑) = 120.22

Note. *$p < .05$, MVPA = moderate to vigorous physical activity, c_ip_i = control belief strength x control belief power (belief strength was multiplied by belief power for each participant and then the scores for all participants were averaged).

Based on the results, the participants evaluated the presence of barriers when teaching MVPA at least 50% of the time in adapted physical education classes and rated

above 4 for a lack of support (*M* = 4.28); students' physical and cognitive limitations related to disabilities (*M* = 4.86); students' lack of motivation and negative attitude (*M* = 4.23); and inappropriate environmental settings (i.e., space, safety, gymnasium availability; *M* = 4.28). However, the participants disagreed with the presence of a lack of equipment (*M* = 3.98) and a lack of effective teaching strategies (*M* = 2.97).

Further, the participants believed that the presence of barriers made it difficult for them to teach MVPA at least 50% of the time in adapted physical education classes. These barriers were the lack of equipment (*M* = 4.06); a lack of support (*M* = 4.65); students' physical and cognitive limitations related to disabilities (*M* = 4.71); students' lack of motivation and negative attitude (*M* = 4.55); and inappropriate environmental settings (*M* = 4.65). However, the participants believed that there was not a lack of effective teaching strategies (*M* = 3.86) to teach MVPA at least 50% of the time in adapted physical education classes.

Only one factor (i.e., students' physical and cognitive limitations related to disabilities) was negatively associated with the behavioral intention (weak correlation coefficient). The more severe the physical and cognitive limitations of students with disabilities, the more difficult for adapted physical educators to teach MVPA at least 50% of the time in adapted physical education classes.

CHAPTER V

DISCUSSION

Theory of planned behavior is a behavioral change theory that explains what leads individuals to perform a certain behavior (Ajzen, 1985). According to the theory of planned behavior, adapted physical educators who have a strong intention to teach physically active classes are highly likely to teach physically active classes. In addition, the intentions to teach physically active classes were influenced by their attitudes, perceived social expectation, and perceived control over the behavior (i.e., teach physically active class; Fishbein & Ajzen, 1975). Further, the attitudes, the perceived social expectation, and the perceived control were formed by adapted physical educators' beliefs (i.e., behavioral belief) in the consequence of the behavior, beliefs (i.e., normative belief) about the expectation of significant people, and beliefs (i.e., control belief) regarding the facilitators and impeders of teaching physically active classes.

The present investigation was designed based on the theory of planned behavior and conducted to: (a) determine the relationships to adapted physical educators' psychological process of having intentions to teach Moderate Vigorous Physical Activity (MVPA) at least 50% of their class time with students with disabilities and (b) determine the cognitive foundation of the intentions of adapted physical educators to teach MVPA at least 50% of their class time with students with disabilities. A questionnaire was designed to assess the seven constructs of the theory (i.e., intention, attitude toward

behavior, subjective norm, perceived behavioral control, behavioral belief, normative belief, control belief) of 122 practicing adapted physical educators in the United States.

Provided in this chapter is a discussion related to the findings based on the purposes of this investigation: (a) adapted physical educators' salient beliefs about the behavior (i.e., teaching 50% of the class time devoted to MVPA to students with disabilities); (b) behavioral intention, attitude toward behavior, subjective norm, perceived behavioral control, control belief, behavioral belief, and normative belief of adapted physical educators with regard to the behavior; (c) the relationships between behavioral intention, attitude toward behavior, subjective norm, perceived behavioral control, control belief, behavioral belief, and normative belief; (d) the predictive relationships of attitude toward behavior, subjective norm, perceived behavioral control, control belief, behavioral belief, and normative belief with the behavioral intention; and (e) the relationships of individual behavioral, normative, and control beliefs with the behavioral intention.

Prediction of the Behavioral Intention

The following is a discussion related to the predictive relationships of directly measured constructs with the intentions of adapted physical educators to teach MVPA at least 50% of their class time with students with disabilities. The direct measures are attitudes toward behavior subjective norms perceived behavioral control which are determined by behavioral beliefs, normative beliefs, and control beliefs that indirectly measure the constructs.

Intention With the Direct Measures

Based on the results of this investigation, the attitude toward behavior, the subjective norm, and the perceived behavioral control positively contributed to the prediction of the behavioral intention of adapted physical educators to teach MVPA at least 50% of their class time. As the adapted physical educators expressed more positive attitude, perceived more social expectation, and had more confidence in teaching MVPA at least 50% of the time with students with disabilities, they were expected to have stronger intentions to teach MVPA.

No known researchers have examined the predictive relationships between the aforementioned constructs in adapted physical educators (i.e., attitude toward behavior, subjective norm, perceived behavioral control, intention). These findings in the present investigation were consistent with findings from researchers who investigated this topic with general physical educators (Jeong & Martin, 2011; Martin & Kulinna, 2004; Kudlaeek, Valkova, Sherrill, Myers, & French, 2002). In these previous studies, it was reported that intentions of general physical educators were affected by their attitude, perceived social expectation, and perceived sense of control over the behavior.

Further, based on the findings related to the degree of the effects of each predictor associated with the behavioral intention, attitude toward behavior was the most significant contributor to the predictive model while the relatively small but significant contribution related to perceived behavioral control and subjective norm. In other words, adapted physical educators, who felt positive attitudes toward teaching MVPA at least 50%

of their class time with students with disabilities, were more likely than those who felt social expectation and/or a sense of control with regard in their intentions to teach MVPA at least 50% of their class time with students with disabilities.

This finding in the present study was consistent with a notion that suggested that predicting individual' behaviors and intentions are in general supported by his/her attitudes based on the large body of evidence (Ajzen, 2010). Further, experts in adapted physical education, Kozub and Lienert (2003) and Tripp and Sherrill (1991) have suggested that attitudes played an important role in adapted physical educators having intentions to teach MVPA at least 50% of their class time with students with disabilities.

No similar study with adapted physical educators was located; but the present finding supports earlier studies with general physical educators (Burak, Rosenthal, & Richardson, 2013; Jeong & Martin, 2011; Martin & Kulinna, 2004, 2005; Martin et al., 2001; Martin & Kudlacek, 2010; Richardson et al., 2012). In these earlier studies listed above, the researchers provided information regarding the attitude toward behavior that was the greatest predictor of behavioral intentions of preservice general physical educators, practicing general physical educators, and coaches. In the present investigation, some of the adapted physical educators who also taught general physical education and had a certification in general physical education, similar to the general physical educators in those earlier studies, it is possible that the adapted physical educators and general physical educators share similar psychological process related to teaching adapted and general physical education (Bowers, 2009).

However, in contrast to the findings from the present investigation, earlier researchers have concluded that perceived behavioral control was the most significant contributor to predict the behavioral intention (Conatser, Block, & Gansneder, 2002; Fournidou, Kudlacek, & Evagellinou, 2011; Stewart-Stanec, 2009). A potential reason for this conflicting finding was the relative importance of attitude toward behavior, subjective norm, and perceived behavioral control varies depending on the intention of the behavior under investigation and from one population to another based on the theory of planned behavior (Ajzen, 2010).

Specifically, in the present study, attitudinal considerations (e.g., positive beliefs in the benefits of MVPA) were more important than normative considerations (e.g., parents’ expectation) and perceived behavioral control (e.g., limited access to the gymnasium) for the adapted physical educators' intentions to teach MVPA. In contrast, in the previous studies, adapted aquatic teachers' and physical educators' perceived control (e.g., inadequate equipment, lack of support) over behaviors that were more imperative to their intentions; specifically related to: (a) teach swimming to students with mild to severe intellectual disabilities in inclusive settings and (b) administer physical fitness tests effectively to students who were nondisabled. It was reasonable to say that teaching swimming and standardized physical fitness testing generally required more assistance, equipment, and structured procedures to ensure safety in the pool and to valid and reliable physical fitness data from students. These requirements are even more necessary when teachers interact with students with severe disabilities who have considerably

limited adaptive behavior skills such as little or no communication skills and delayed motor skills compared to students with less severe disabilities (Sherrill, 2004).

Direct Measures With the Indirect Measures

The behavioral beliefs and the normative beliefs of the adapted physical educators positively affected their attitudes, perceived social expectation, whereas, their control beliefs negatively influenced the perceived control over teaching MVPA at least 50% of their class time with students with disabilities. Specifically related to the inverse relationship between the control beliefs and the perceived control, it can be justifiable that the adapted physical educators who were less likely to believe about the factors (i.e., lack of support, lack of equipment) that impede teaching MVPA at least 50% of the class were more likely to have stronger confidence in teaching MVPA at least 50% of their class time.

These findings contributed to the evidence identified by several researchers (Ajzen & Driver, 1991; Backman, 2000; Courneya & Friedenreich, 1997; Doyle-Baker, 2000). They reported similar relationships between (a) behavioral belief and attitude toward behavior; (b) normative belief and subjective norm; and (c) control belief and perceived behavioral control. Therefore, the predictive relationships of the aforementioned constructs conformed to the assumptions of the theory of planned behavior (Ajzen, 1985).

While the predictive models supported the theory of planned behavior, their overall attitude, perceived social expectation, and perceived control over teaching MVPA

at least 50% of their class time reported in the present study can be explained by their corresponding beliefs. The following is a discussion to provide the cognitive foundation of adapted physical educators who had intentions with the positive attitudes, perceived social expectation, and perceived control over teaching MVPA at least 50% of their class time with students with disabilities.

Cognitive Foundation of the Intention

To understand cognitive foundation of adapted physical educators' strong intentions to teach MVPA at least 50% of their class time with students with disabilities, the results from the behavioral beliefs, the normative beliefs, and the control beliefs were examined to determine their relationships to the behavioral intention. Further, the results of the attitude toward behavior, the subjective norm, and the perceived behavioral control that were combined with the results of the behavioral beliefs, the normative beliefs, and the control beliefs were discussed in this section.

Attitude Toward Behavior and Behavioral Belief Constructs

The adapted physical educators had positive attitude toward teaching MVPA at least 50% of their class time with students with disabilities. Based on the theory of planned behavior, the adapted physical educators' positive attitudes came from their beliefs (i.e., behavioral beliefs) in the positive or negative consequences of teaching MVPA. The positive consequences reported were in rank order: (a) increase physical fitness of students with disabilities; (b) lead students with disabilities to healthier lifestyle and well-being; (c) influence on the affect domain of students (e.g., attitude, self-esteem,

emotion, happiness); (d) increase the amount of time on goals and objectives related to physical activities on an Individualized Education Program (IEP) of students with disabilities; and (e) increase the purposeful and successful participation of students with disabilities in community and home based activities. The negative consequence was: increase risk of fatigue, injury, or illness related to their disabilities.

More importantly, in the present investigation, the adapted physical educators favorably believed the positive consequences could follow from teaching MVPA at least 50% of their class time and these consequences were valuable to their students with disabilities (Rimmer & Rowland, 2008). Regarding the negative consequence, the adapted physical educators also believed that the increased risk of fatigue, injury, or illness related to a student's disabilities could be unsafe for students with disabilities when teaching MVPA at least 50% of the class time (Individuals With Disabilities Education Act, [IDEA], 2004; Wright & Wright, 2005). It was reasonable to say that the adapted physical educators' favorable beliefs of the positive consequences can be related to their positive attitude toward teaching MVPA at least 50% of their class time with students with disabilities.

However, based on the results, the adapted physical educators demonstrated that only the behavioral beliefs about the positive consequences were moderately to strongly associated with the behavioral intentions. The adapted physical educators who strongly believed in the positive consequences (e.g., increased physical fitness, healthier lifestyle, and improved affective well-being of students with disabilities) were likely to intend to

teach MVPA at least 50% of their class time with students with disabilities. No research could be located that did or did not support the present findings that adapted physical educators' beliefs about the positive consequences of teaching MVPA.

However, it was observed that general physical educators believed teaching MVPA to students would improve the physical fitness levels of students (Kulinma, Silverman, & Keating, 2000). This might imply that the adapted physical educators in the present investigation who earned certifications in general physical education and taught general physical education in addition to adapted physical education might have similar beliefs as the general physical educators.

In addition, it was a fair assumption that the positive consequences of MVPA (i.e., increased physical fitness, healthy lifestyle, improved affective well-being of students with disabilities) were considered to be common knowledge in adapted and general physical education (IDEA, 2004); National Association for Sport and Physical Education [NASPE], 2009). Adapted and general physical educators are highly likely to access information related to benefits of MVPA and also it is possible that they should learn this information in the preparation programs or inservice trainings (i.e., Adapted Physical Education National Standards 4: Exercise Science) regarding the benefits of MVPA (e.g., improved physical fitness; Bowers, 2009). Further, the MVPA has gained considerable attention from adapted and general physical educators as a result of childhood obesity which reached the epidemic level in the United States. It was considered imperative that adapted physical educators believed in the positive benefits of teaching students with

disabilities MVPA (Bandini, Curtin, Hamad, Tybor, & Must, 2005; Rimmer, Rowland, &Yamaki, 2007).

Subjective Norm and Normative Belief Constructs

Based on the results, the adapted physical educators felt that there was overall social expectation to teach MVPA at least 50% of the class time with students with disabilities. Further, the social expectation of the adapted physical educators was derived from their beliefs in the significant individuals' expectation of adapted physical educators to teach 50% of their class time with students with disabilities. The significant people identified in rank order were: (a) parents/guardians; (b) medical personnel (i.e., medical physicians, school nurses, physical therapists, occupational therapists); (c) classroom teachers; (d) general physical educators; (e) administrators; and (f) students with disabilities.

The adapted physical educators believed the expectations of parents/guardians, medical personnel, classroom teachers, general physical educators, and administrators to teach MVAP at least 50% of the class time. Students with disabilities were only a group that the adapted physical educators did not believe their expectations related to teaching MVPA. Furthermore, among the significant individuals, the adapted physical educators agreed that they would generally comply with administrators, parents/guardians, and medical personnel’s expectation.

This finding was partially supported by numerous experts (Auxter, Pyfer, Zittel, & Roth, 2010; Chaapel, Columna, Lytle, & Bailey, 2013; Columna et al., 2008) and the

findings in earlier investigations (NASPE, 2000, 2002). The experts and the investigators suggested that parents, school personnel (i.e., administrators, classroom teachers), and medical personnel were considered important for adapted physical educators to assist in instructional decisions (to teach MVPA at least 50% of their class time) with students with disabilities. In addition, parents, school personnel, and medical personnel play a critical role in the IEP of students with disabilities. This is because the IDEA (2004) mandates that annual goals of adapted physical education services must be in agreement between IEP team members that could include parents, administrators, classroom teachers, special education teachers, general physical educators, and related school personnel (e.g. school psychologists, physical therapists, occupational therapists). It was clear that the significant individuals identified in the present study play an important role in the decision process of adapted physical education with students with disabilities.

However, it was interesting to note that the adapted physical educators were not motivated to comply with the expectations of the general physical educators. In the literature, the collaboration between the adapted physical educator and the general physical educator was an important competency of effective adapted physical educators to provide appropriate instruction to students with disabilities (Bowers, 2009). However, it may be that, although adapted physical educators were not motivated to comply with the general physical educators, those individuals' expectations could be the possible teaching considerations for the adapted physical educators when teaching MVPA at least 50% of their class time.

Perceived Behavioral Control and Control Belief Constructs

The adapted physical educators felt highly confident in teaching MVPA at least 50% of their class time with students with disabilities. The determinants of their confidence were assumed to come from their beliefs regarding factors that made it easy (i.e., facilitator) or difficult (i.e., barrier) for the adapted physical educators to teach MVPA at least 50% of the class time. The factors in rank order were: (a) support/assistant from school and family; (b) instructional setting (e.g., adequate space, gymnasium accessibility, safety); (c) student's disability (physical and cognitive limitation); (d) equipment; (e) student's lack of motivation and attitude, and (f) teaching strategies (class setup, routine, game, warm-up, and higher expectation).

The adapted physical educators believed that the barriers (i.e., lack of support, inappropriate environmental settings, student’s physical and cognitive limitations, students' lack of motivation and negative attitude) may exist which could make it difficult to teach MVPA at least 50% of their class time. It was also noted that their beliefs about the lack of equipment were neutral. In addition, the adapted physical educators did not believe that they had a lack of instructional skills to teach MVPA at least 50% of their class time with students with disabilities.

This finding partially supported the results of Hodge and Akiffo (2007) who reported that adapted physical educators expressed concerns about the inadequate space, lack of support from paraeducators, and lack of equipment when providing adapted physical education services with students with disabilities; with exception of lack of

equipment. It could be that the barriers such as lack of support and inappropriate environmental settings may have existed in general; however, not much existed and not strongly impeded the adapted physical educators from teaching MVPA at least 50% of their class time with students with disabilities. With the consistent findings from this present study and the past study, it was apparent that their beliefs in the minimal presence of the identified barriers, as well as, their appropriate knowledge and skills to teach MVPA determined they were confident and had strong intentions to teach MVPA at least 50% of their class time with students with disabilities.

Further, one of the barriers (i.e., students' physical and cognitive limitations related to disabilities) was negatively associated with the intentions of the adapted physical educators to teach MVPA at least 50% of their class time with students with disabilities. As adapted physical educators have stronger beliefs about the physical and cognitive limitations of students with disabilities, it is expected that they will have lower intentions to teach MVPA at least 50% of their class time that included this population. Although no study was located to support adapted physical educators' beliefs regarding teaching MVPA, there was a similar finding by Conatser et al. (2002) who reported that adapted aquatic instructors had no intentions to teach swimming to students with severe disabilities while they intended to teach students with mild disabilities. In general, teaching students with more severe disabilities require the use of extensive or pervasive supports compared to students with less severe disabilities (Sherrill, 2004; Taylor, Smiley, & Richards, 2010).

Implications of the Findings

The findings in the present study provided implications for professionals in preservice and inservice of adapted physical educators. A major implication was that professionals involved in adapted physical education teacher education (i.e., preservice) and adapted physical education training (i.e., inservice) are able to design and implement programs and interventions to increase the likelihood of teaching MVPA at least 50% of the class time with students with disabilities for the future adapted physical educators and the practicing adapted physical educators (Ajzen, 2010; Francis et al., 2004; Martin & Kulinna, 2004, 2005; Martin et al., 2001).

The preservice and inservice should emphasize the importance of MVPA (i.e., improved physical fitness, emotion, increased participation of students with disabilities in physical activity in community settings) with students with disabilities. This will help future and current adapted physical educators to foster and maintain favorable beliefs about the benefits of MVPA. Further, the favorable beliefs of the adapted physical educators will positively influence their attitudes, which in turn, lead them to teach MVPA at least 50% of their class time with students with disabilities. However, it is only assumed by the theory but evidence was not provided in the present study related to the relationship between adapted physical educators' intentions and their actual behaviors (Ajzen, 2010).

In addition, the professionals should bear in mind that parents, school personnel, and especially medical personnel also influence adapted physical educators to implement

a plan to teach MVPA at least 50% of their class time with students with disabilities although the social expectation were not as influential as the attitude were on the intentions of adapted physical educators. However, their inputs (e.g., opinions and advices) regarding teaching MVPA with students with disabilities are critical to help adapted physical educators to make decisions of what goals and objectives to teach students with disabilities (Auxter et al., 2010; Chaapel et al., 2013; Columna et al., 2008; NASPE, 2000, 2002).

Related to the control beliefs, the professionals in the preservice and inservice training should encourage the philosophy of “disability is not inability” while providing clear information to adapted physical educators to have better understandings of disabilities (Sherrill, 2004). This is because the physical and cognitive limitations related to students with disabilities are in general pervasive throughout their lives; but students can self be overcome (Kaiser, 2014; Hartz, 2014; Moritz, 2009). This philosophy would help adapted physical educators maintain or improve positive attitude toward teaching students with disabilities MVPA at least 50% of the class time.

Many examples of successful participations of children with disabilities in physical activity are available and can be provided to adapted physical educators. One example is adapted physical educators and students with disabilities participating in physical activity together with shared goals and objectives (Jacobson, Mulick, St Rojahn, 2007; Siperstein, Parker, Bardon, & Widaman, 2007). This type of activity would help

both adapted physical educators and children with disabilities being motivated to work together and facilitate positive attitudes toward one another.

Based on the results of the study, another implication is that school leaders, such as principals and adapted physical education directors need to understand the benefits of physical activity on the health and well-being of student with disabilities and advocate for adapted physical educators to focus on MVPA with students with disabilities. For instance, physical activity promotion has gained substantial attention of school and health related professional leaders since the obesity is prevalent among children and youth and more severe in children with disabilities (Yamaki, Rimmer, Lowry, & Vogel, 2011). As a result, with this knowledge these leaders should play an important role in promoting MVPA among students with disabilities.

Limitations

Caution must be used when generalizing the results because there were limitations of the present investigation. First, the adapted physical educators' attitude was measured using a self-report questionnaire that might cause them to deliberatively or unconsciously respond in a more positive way (Farmer, 1999). Second, although the questionnaire were sent to all members including Certified Adapted Physical Educators (CAPEs) of national and state level organizations, the return rate was considerable low compared to the membership in organization. Therefore, the inference of the results from this study can be limited to the population of adapted physical educators. At the same time, it should be

noted that adapted physical educators who had positive attitudes toward and interests in MVPA may have been more willing to participate in this present investigation.

Third, the participants were selected from 22 States; but primarily from California, New York, and Texas. This was because two of three organizations that approved the conduct of the present investigation were based in Texas and New York: Texas Association for Health, Physical Education, Recreation and Dance (TAHPERD) and New York State Association for Health, Physical Education, Recreation, and Dance (NYS AHPERD). Roles and responsibilities of adapted physical educators and their social environments can vary from one state to another. Thus, the generalizability of the present findings can be limited to adapted physical educators in those major States.

Fourth, the participants were not randomly selected but purposely selected if they were Certified Adapted Physical Educators (CAPEs) who passed the Adapted Physical Education Standard (APENS) examination and adapted physical educators who had membership in Texas Association for Health, Physical Education, Recreation and Dance (TAHPERD), New York State Association for Health, Physical Education, Recreation, and Dance (NYS AHPERD), and National Consortium for Physical Education for Individuals With Disabilities (NCPEID). Therefore, the participants might not be representative to the population of adapted physical educators in the United States.

Fifth, while the constructs were randomized the items in constructs were not randomly ordered so there might be an order effect to obtain biased data. Sixth, the results were limited to test our predetermined research questions using multiple

regression, linear regression, and correlations. There might be other important relationships between variables and effects of a variable(s) on the other. This might be tested using more complicated statistical method such as structural equation model (SEM).

Conclusions

In conclusion, based on the present findings, it is suggested that the theory of planned behavior (Ajzen, 1985) was applicable to explain adapted physical educators' intentions to teach MVPA at least 50% of their class time with students with disabilities. The adapted physical educators' positive attitudes, perceived social expectation, and perceived sense of control positively influenced their intentions to teach MVPA at least 50% of their class time with students with disabilities. More importantly, their strong intentions at least met the national recommendation of physical education (i.e., minimum 50% of class time should be moderate to vigorous to students in their physical education) according to *Healthy People* 2020 (U.S. Department of Health & Human Services, 2010). Further, it was also concluded that the cognitive foundation of teaching MVPA at least 50% of their class with students with disabilities were associated with their beliefs of the positive consequences (i.e., physical and psychological benefits of MVPA), the social expectation from significant people (i.e., administrators, parents/guardians, medical personnel), and the barrier (i.e., students' physical and cognitive limitations related to their disabilities).

Recommendations

Based on results from this investigation, there are several areas recommended for future researchers to pursue:

1. External variables beyond theory of planned behavior could be incorporated. These external variables (e.g., gender, age, teaching experience, severity of students' disabilities that adapted physical educators interact with) could impact their intentions and behaviors of interest.

2. Preservice or inservice programs can be designed, implemented, and evaluated to increase or maintain adapted physical educators teaching MVPA at least 50% of their class time.

3. Replication of this investigation is recommended because there were few studies with adapted physical educators' intentions and influential variables to the intentions.

4. Minimal pertinent literature was available that provided predictive relationships between intentions and actual behaviors of adapted physical educators. An investigation is needed to develop a concrete body of evidence in adapted physical education with regard to the intention and behavioral relationships.

REFERENCES

Adapted Physical Activity Council of the American Association for Physical Activity and Recreation and the National Consortium for Physical Education and Recreation for Individuals With Disabilities. (2010). *Highly qualified adapted physical education teachers*. Retrieved November 15, 2014 from http://www.shapeamerica.org/advocacy/positionstatements/loader.cfm?csModule=security/getfile&pageid=5850

Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhl & J. Beckmann (Eds.), *Action control: From cognition to behavior*. Berlin, Heidelber: Springer-Verlag.

Ajzen, I. (2006). *Constructing a theory of planned behavior questionnaire: Conceptual and methodological considerations.* Retrieved May 15, 2014 from http://people.umass.edu/aizen/pdf/tpb.measurement.pdf

Ajzen, I. (2010). *Attitudes, personality, and behavior* (2nd ed.). New York: McGraw Hill.

Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice-Hall.

Ajzen, I., & Driver, B. L. (1991). Prediction of leisure participation from behavioral, normative, and control beliefs: An application of the theory of planned behavior. *Leisure Sciences, 13*, 185-204.

Alderman, B. L., Benham-Deal, T., Beighle, A., Erwin, H. E., & Olson, R. L. (2012). Physical education's contribution to daily physical activity among middle school youth. *Pediatric Exercise Science, 24*(4), 634-648.

Akuffo, P. B., & Hodge, S. R. (2008). Roles and responsibilities of adapted physical education teachers in an urban school district. *Education and Urban Society, 40*(2), 243-268.

Auxter, D., Pyfer, J., Zittel, L., & Roth, K. (2010). *Principles and methods of adapted physical education and recreation* (11th ed.). New York: McGraw Hill.

Backman, D. R. (2000). Influence of gender and ethnicity on psychosocial predictors of healthy dietary practices and exercise behavior in adolescents. *Dissertation Abstracts International, 60*, 4527.

Bandini, L. G., Curtin, C., Hamad, C., Tybor, D. J., & Must, A. (2005). Prevalence of overweight in children with developmental disorders in the continuous national health and nutrition examination survey (NHANES) 1999-2002. *Journal of Pediatrics, 146*, 738-743.

Bentler, P. M., & Speckart, G. (1979). Models of attitude-behavior relations. *Psychological Review, 86*(5), 452-464.

Berg, B. L. (2007). *Qualitative research methods for the social sciences.* (6th ed.). Boston, MA: Allyn and Bacon

Block, M., & Rizzo, T. L. (1995). Attitudes and attributes of physical educators associated with teaching individuals with severe and profound disabilities. *Journal of the Association for Persons With Severe Handicaps, 20*, 80-87.

Bowers, S. (2009). *Adapted physical education professors' perceptions of teaching behaviors of effective general and adapted physical educators* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 3399050).

Bruce, R. A., Kusumi, F., & Hosmer, D. (1973). Maximal oxygen intake and nomographic assessment of functional aerobic impairment in cardiovascular disease. *American Heart Journal, 85*, 546-562.

Bruininks, R. H., & Bruininks, B. D. (2005). *Bruininks-Oseretsky test of motor proficiency* (2nd ed.). Minneapolis, MN: Pearson.

Burak, L. J., Rosenthal, M., & Richardson, K. (2013). Examining attitudes beliefs, and intentions regarding the use of exercise as punishment in physical education and sport: An application of the theory of reasoned action. *Journal of Applied Social Psychology, 43*(7), 1436-1445.

Cameron, J., Hooks, I., Kaysing, N., Hoffman, M., Hackett, S., Butler, L. L., & Crawford, S. M. (2011). Should P-16 physical education programs focus more on wellness and obesity prevention objectives and goals? *Journal of Physical Education, Recreation and Dance, 82*(9), 12-18.

Centers for Disease Control and Prevention. (2004). *National diabetes fact sheet: General information and national estimates on diabetes in the United States, 2003. Rev ed.* Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention.

Centers for Disease Control and Prevention. (2006). *Disability and health state chart book: Profiles of health for adults with disabilities.* U.S. Department of Health and Human Services, Atlanta.

Centers for Disease Control and Prevention. (2008). *School-based physical education: Working with school to increase physical activity among children and adolescents in physical education classes.* Washington D.C: Partnership for Prevention.

Centers for Disease Control and Prevention. (2014). *Disability and obesity,* Retrieved May 15, 2014 from http://www.cdc.gov/ncbddd/disabilityandhealth/obesity.html

Chaapel, H., Columna, L., Lytle, R., & Bailey, J. (2013). Parental expectations about adapted physical education services. *Journal of Special Education, 47*(3), 186-196.

Chen, A. Y., Kim, S. E., Houtrow, A. J., & Newacheck, P. W. (2010). Prevalence of obesity among children with chronic conditions. *Obesity,18*(1), 210-213.

Child and Adolescent Health Measurement Initiative. (2007) National survey of children's health SAS code for data users: Child health indicators and subgroups. Data Resource Center for Child and Adolescent Health.

Columna, L. C., Pyfer, J., Senne, T., Velez, L., Bridenthrall, N., & Canabal, M. Y. (2008). Parental expectations of adapted physical educators: A Hispanic perspective. *Adapted Physical Activity Quarterly*, *25*(3), 228-246.

Conatser, P., Block, M., & Gansneder, B. (2002). Aquatic instructors' beliefs toward inclusion: The theory of planned behavior. *Adapted Physical Activity Quarterly, 19*(2), 172-187.

Cothran, D. J., McCaughtry, N., Kulinna, P., & Martin, J. (2006). Top-down public health curricular change: The experience of physical education teachers in the United States. *Journal of In-service Education*, *32*(4), 533-547.

Courneya, K. S., & Friedenreich, C. M. (1997). Determinants of exercise during colorectal cancer treatment: An application of the theory of planned behavior. *Oncology Nursing Forum*, *24*, 1715-1723

Cronbach, L. J. (1990). *Essentials of psychological testing* (5th ed.). New York: Harper Collins.

Currie, C., Zanotti, C., Morgan, A., Currie, D., & de Looze, M. (2012). *Social determinants of health and well-being among young people: Health behavior in school-aged children: International report from the 2009/2010 survey*. Sterling, VA: Stylus.

Curtin, C., Bandini, L., Perrin, E., Tybor, D., & Must, A. (2005). Prevalence of overweight in children and adolescents with attention deficit hyperactivity disorder and autism spectrum disorders: A chart review. *BioMed Central (BMC) Pediatrics, 5*, 48-54.

Dair, J., Ellis, M., & Lieberman, L. J. (2006). Prevalence of overweight among deaf children. *American Annals of the Deaf, 151*(3), 318-326.

Darrah, J., Wessel, J., Nearingburg, P., & O'Connor, M. (1999). Evaluation of a community fitness program for adolescents with cerebral palsy. *Pediatric Physical Therapy, 11*(1), 18-23.

Davis, K., Zhang, G., & Hodson, P. (2011). Promoting health-related fitness for elementary students with intellectual disabilities through a specifically designed activity program. *Journal of Policy and Practice in Intellectual Disabilities, 8*(2), 77-84.

President's Council on Physical Fitness and Sports. (1985). *Youth physical fitness*. Washington DC: U.S. Department of Health and Human Services.

Dillon, S. R., & Sherrill, C. (2003). Self-reported job responsibilities of public school adapted physical educators. *Perceptual and Motor Skills, 96*(1), 305-310.

Doll-Tepper, G., von Selzman, H., & Lienert, C. (1992). Teach the teachers: Including individuals with disabilities in physical education. *International Council for Health, Physical Education, Recreation, Sport and Dance Journal*, 28(2), 23-27.

Doyle-Baker, P. K. (2000). *Fibromyalgia syndrome patient's intention to exercise: An application of the theory of planned behavior* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 9985687).

Dugard, P., Todman, J., & Staines, H. (2010). *Approaching multivariate analysis: A practical introduction* (2nd ed.). New York: Routledge/Taylor & Francis.

Dunn, J. M., & Leitschuh, C. A. (2009). *Special physical education* (9th ed.). Dubuque, IA: Kendall Hunt.

Dyer, S. M. (1994). Physiological effects of a 13-week physical fitness program on Down syndrome subjects. *Pediatric Exercise Science, 6*(1), 88-100.

Chumney, E. G., & Simpson, K. N. (2006). *Methods and designs for outcomes research.* Bethesda, MD: American Society of Health-System Pharmacists.

Ebell, M. H., Siwek, J., Weiss, B. D., Woolf, S. H., Susman, J., Ewigman, B., & . . . Bowman., M. (2004). Strength of recommendation taxonomy. *Journal of the American Board of Family Practice, 17*(1), 59-67.

Ells, L. J., Lang, R. R., Shield, J. H., Wilkinson, J. R., Lidstone, J. M., Coulton, S. S., & Summerbell, C. D. (2006). Obesity and disability: A short review. *Obesity Reviews, 7*(4), 341-345.

Everhart, B., Everhart, K., Mchugh, H., Newman, C., Hershey, K., & Lorenzi, D. (2013). Teaching-learning patterns of expert and novice adapted physical educators. *Education, 133*(4), 456-469.

Farmer, K. C. (1999). Methods for measuring and monitoring medication regimen adherence in clinical trials and clinical practice. *Clinical Therapeutics*, 21(6), 1074-1090.

Field, A. P. (2009). *Discovering statistics using SPSS: And sex and drugs and rock 'n' roll* (3rd ed.). London: Sage.

Fishbein, H. D. (1967). Cs intensity and cs-ucs interval effects in eyelid conditioning. *Psychonomic Bulletin, 1*(2), 16.

Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention, and behavior: An introduction to theory and research.* Boston, MA: Addison-Wesley.

Folsom-Meek, S., & Rizzo, T. (2002). Validating *the physical educators' attitude toward teaching individuals with disabilities* III (PEATID III) survey for future professionals. *Adapted Physical Activity Quarterly, 19*(2), 141-154.

Fournidou, I., Kudlacek, M., & Evagellinou, C. (2011). Attitudes of in-service physical educators toward teaching children with physical disabilities in general physical education classes in Cyprus. *European Journal of Adapted Physical Activity, 4*(1), 22-38.

Fragala-Pinkham, M., Haley, S. M., & Goodgold, S. (2006). Evaluation of a community-based group fitness program for children with disabilities. *Pediatric Physical Therapy, 18*(2), 159-167.

Fragala-Pinkham, M., Haley, S. M., & O'Neill, M. E. (2008). Group aquatic aerobic exercise for children with disabilities. *Developmental Medicine and Child Neurology, 50*(11), 822-827.

Francis, J., Eccles, M. P., Johnston, M., Walker, A. E., Grimshaw, J. M., Foy, R., . . . Bonetti, D. (2004). *Constructing questionnaires based on the theory of planned behavior: A manual for health services researchers.* University of Newcastle upon Tyne, UK: Centre for Health Services Research.

Giagazoglou, P., Kokaridas, D., Sidiropoulou, M., Patsiaouras, A., Karra, C., & Neofotistou, K. (2013). Effects of a trampoline exercise intervention on motor performance and balance ability of children with intellectual disabilities. *Research in Developmental Disabilities, 34*(9), 2701-2707.

Gillespie, M. (2003). Cardiovascular fitness of young Canadian children with and without mental retardation. *Education and Training in Developmental Disabilities, 38*(3), 296-301.

Golubovic, S., Maksimovic, J., Golubovic, B., & Glumbic, N. (2012). Effects of exercise on physical fitness in children with intellectual disability. *Research in Developmental Disabilities: A Multidisciplinary Journal, 33*(2), 608-614.

Gorter, H., Holty, L., Rameckers, E., Elvers, H., & Oostendorp, R. (2009). Changes in endurance and walking ability through functional physical training in children with cerebral palsy. *Pediatric Physical Therapy, 21*(1), 31-37.

Hallawell, B., Stephens, J., & Charnock, D. (2012). Physical activity and learning disability. *British Journal of Nursing, 21*(10), 609-612.

Hartnett, T. (2011). *Consensus-oriented decision making.* Gabriola Island, BC, Canada: New Society.

Hartz, C. (2014). Drive to overcome disability: Brendon Jacks lives the good life. *Amputee Golfer Magazine*, 32-33.

Heath, G., & Fentem, P. (1997). Physical activity among persons with disabilities: A public health perspective. *Exercise and Sport Sciences Reviews, 25*, 195-234.

Hinckson, E., & Curtis, A. (2013). Measuring physical activity in children and youth living with intellectual disabilities: A systematic review. *Research in Developmental Disabilities, 34*(1), 72-86.

Hodge, S. R., & Akuffo, P. B. (2007). Adapted physical education teachers' concerns in teaching students with disabilities in an urban public school district. *International Journal of Disability, Development, and Education, 54*(4), 399-416.

Individuals With Disabilities Education Act (IDEA) of 2004, 20 U.S.C. 1400 et seq.

Jacobson, J., Mulick, J., St Rojahn, J. (2007). *Handbook of intellectual and developmental disabilities.* New York: Springer.

Jeong, M., & Block, M. E. (2011). Physical education teachers' beliefs and intentions toward teaching students with disabilities. *Research Quarterly for Exercise and Sport, 82*(2), 239-246.

Jordan, A., Glenn, C., & McGhie-Richmond, D. (2010). The supporting effective teaching (SET) project: The relationship of inclusive teaching practices to teachers' beliefs about disability and ability, and about their roles as teachers. *Teaching and Teacher Education, 26*, 259-266.

Kaiser, M. (2014). Golfers overcome disabilities to compete in unique tournament. *Parks and Recreation, 49*(5), 41-42.

Kemper, H. J. G. (1995). *The Amsterdam growth study: A longitudinal analysis of health, fitness and lifestyle.* Champaign, IL: Human Kinetics.

Kelly, L. E. (2006). *Adapted physical education national standards* (2nd ed.).Champaign, IL: Human Kinetics.

Kelly, L. E., & Gansneder, B. (1998). Preparation and job demographics of adapted physical educators in the United States. *Adapted Physical Activity Quarterly, 15*(2), 141-154.

Khalili, M., & Elkins, M. (2009). Aerobic exercise improves lung function in children with intellectual disability: A randomised trial. *Australian Journal of Physiotherapy, 55*(3), 171-175.

Kozub, F., & Lienert, C. (2003). Attitudes toward teaching children with disabilities: Review of literature and research paradigm. *Adapted Physical Activity Quarterly, 20*(4), 323-346.

Krueger, D. L., DiRocco, P., & Felix, M. (2000). Obstacles adapted physical education specialists encounter when developing transition plans. *Adapted Physical Activity Quarterly, 17*(2), 222-236.

Kudlacek, M., Jesina, O., Sterbova, D., & Sherrill, C. (2008). The nature of work and roles of public school adapted physical educators in the United States. *European Journal of Adapted Physical Activity, 1*(2), 45-55.

Kudlacek, M., Valkova, H., Sherrill, C., Myers, B., & French, R. (2002). An inclusion instrument based on planned behavior theory for prospective Czech physical educators. *Adapted Physical Activity Quarterly, 19*(3), 280-299.

Kulinma, P. H., Silverman, S., & Keating, X. D. (2000). Relationship between teachers' belief systems and actions toward teaching physical activity and fitness. *Journal of Teaching in Physical Education, 19*(2), 206-221.

Li, W., Rukavina, P. B., Sutherland, S., Shen, B., & Insook, K. (2012). Physical education in the eyes of overweight or obese adolescents' parents. *Journal of Sport Behavior, 35*(2), 204-222.

Longmuir, P. E, & Bar-Or, O. (2000). Factors influencing the physical activity levels of youths with physical and sensory disabilities. *Adapted Physical Activity Quarterly, 17*, 40-53.

Lynn, M. R. (1986). Determination and quantification of content validity. *Nursing Research, 35*, 382-385.

Marsh, H., Papaioannou, A., & Theodorakis, Y. (2006). Causal ordering of physical self-concept and exercise behavior: Reciprocal effects model and the influence of physical education teachers. *Health Psychology, 25*(3), 316-328.

Marshall, B., Cardon, P., Poddar, A., & Fontenot, R. (2013). Does sample size matter in qualitative research?: A review of qualitative interviews in is research. *Journal of Computer Information Systems, 54*(1), 11-22.

Martin, J. J., & Kulinna, P. H. (2004). Self-efficacy theory and the theory of planned behavior: Teaching physically active physical education classes. *Research Quarterly for Exercise and Sport, 75*(3), 288-297.

Martin, J. J., & Kulinna, P. H. (2005). A social cognitive perspective of physical activity related behavior in physical education. *Journal of Teaching in Physical Education, 24*(3), 265-281.

Martin, J. J., Kulinna, P. H., Eklund, R. C., & Reed, B. B. (2001). Determinants of teachers' intentions to teach physically active physical education classes. *Journal of Teaching in Physical Education, 20*(2), 129-143.

Martin, K., & Kudláček, M. (2010). Attitudes of pre-service teachers in an Australian university towards inclusion of students with physical disabilities in general physical education programs. *European Journal of Adapted Physical Activity, 3*(1), 30-48.

McKenzie, T. L., Sallis, J. F., Faucette, N. N., Roby, J. J., & Kolody, B. B. (1993). Effects of a curriculum and inservice program on the quantity and quality of elementary physical education classes. *Research Quarterly for Exercise and Sport, 64*(2), 178-187.

McKenzie, T. L., Sallis, J. F., Nader, P. R., Coleman, K. J., Tiller, C. L., Sanchez, J., . . . Dzewaltowski, D. A. (2005). System for observing fitness instruction time. *Archives of Pediatric and Adolescent Medicine, 159*, 217-224.

Miller, L. A., McIntire, S., & Lovler, R. L. (2010). *Foundations of psychological testing: A practical approach*. New York: Sage.

Miller, L. E., & Keith L. S. (1983). Handling nonresponse issues. *Journal of Extension, 21*, 45-50.

Moritz, S. (2009). Hope and hard work can overcome disability. *Triathlon Life, 12*(2), 37.

Murphy, N., & Carbone, P. (2008). Promoting the participation of children with disabilities in sports, recreation, and physical activities. *Pediatrics, 121*(5), 1057-1061.

Nader, P. R. (2003). Frequency and intensity of activity of third-grade children in physical education. *Archives of Pediatrics and Adolescent Medicine, 57*(2), 185-190.

National Association for Sport and Physical Education. (2000). *Public attitudes toward physical education.* Reston, VA: Author.

National Association for Sport and Physical Education. (2001). *Standards for advanced programs in physical education teacher education*. Retrieved November 5, 2014 from http://www.aahperd.org/naspe/pdf files/standards advanced.pdf

National Association for Sport and Physical Education. (2002). *Adults/teens' attitude toward physical activity and physical education.* Reston, VA: Author.

National Association for Sport and Physical Education. (2003). *National standards for beginning physical education teachers.* (2n ed.). Reston, VA: Author.

National Association for Sport and Physical Education (2009). *National standards and guidelines for physical education teacher education.* Sewickley, PA: American Alliance for Health, Physical Education, Recreation and Dance.

National Association for Sport and Physical Education and American Heart Association. (2010). *2010 shape of the nation report: Status of physical education in the USA.* Reston, VA: Author.

Neter, J., Schokker, D., de Jong, E., Renders, C., Seidell, J., & Visscher, T. (2011). The prevalence of overweight and obesity and its determinants in children with and without disabilities. *Journal of Pediatrics, 158*(5), 735-739.

Nunnally, J. C. (1994). *Psychometric theory*. (3rd ed.). New York: McGraw Hill.

Obrusnikova, I., & Kelly, L. (2009). Caseloads and job demographics of adapted physical educators in the United States. *Perceptual and Motor Skills, 109*(3), 737-746.

Ogden, C., Carroll, M., Curtin, L., Lamb, M., & Flegal, K. (2010). Prevalence of high body mass index in U.S. children and adolescents, 2007-2008. *Journal of the American Medical Association, 303*(3), 242-249.

Ogden, C. L., Carroll, M. D., Kit, B. K., & Flegal, K. M. (2012*). Prevalence of obesity in the United States, 2009-2010.* NCHS data brief, No. 82. Hyattsville, MD: National Center for Health Statistics.

Oh, H., Rizzo, T. L., So, H., Chung, D., Park, S., & Lei, Q. (2010). Preservice physical education teachers' attributes related to teaching a student labeled ADHD. *Teaching and Teacher Education: International Journal of Research and Studies, 26*(4), 885-890.

Ozmen, T., Yildirim, N., Yuktasir, B., & Beets, M. W. (2007). Effects of school-based cardiovascular-fitness training in children with mental retardation. *Pediatric Exercise Science, 19*(2), 171-178.

Pan, C., & Frey, G. (2006). Physical activity patterns in youth with autism spectrum disorders. *Journal of Autism and Developmental Disorders, 36*(5), 597-606.

Pate, P. R., Baranowski, T., Dowda, M., & Trost, S. G. (1996). Tracking of physical activity in young children. *Medical Science in Sports Exercise, 28*, 92-96.

Pitetti, K. H., Yarmer, D. A., & Fernhall, B. (2001). Cardiovascular fitness and body composition of youth with and without mental retardation. *Adapted Physical Activity Quarterly, 18*(2), 127-141.

Portney, L. G., & Watkins, M. P. (2009). *Foundations of clinical research: Applications to practice* (3rd ed.). Upper Saddle River, NJ: Pearson-Prentice Hall.

Prusak, K., Graser, S., Pennington, T., Zanadrea, M., Wilkinson, C., & Hager, R. (2011). A critical look at physical education and what must be done to address obesity issues. *Journal of Physical Education, Recreation and Dance, 82*(4), 39-46.

Reinehr, T., Dobe, M., Winkel, K., Schaefer, A., Hoffmann, D., & Twisselmann, B. (2010). Obesity in disabled children and adolescents: An overlooked group of patients. *Deutsches Ärzteblatt International, 107*(15), 268-275.

Richardson, K., Rosenthal, M., & Burak, L. (2012). Exercise as punishment: An application of the theory of planned behavior. *American Journal of Health Education, 43*(6), 356-365.

Rimmer, J. H., & Rowland, J. L. (2008). Physical activity for youth with disabilities: A critical need in an underserved population. *Developmental Rehabilitation, 11*(2), 141-148.

Rimmer, J., Rowland, J., & Yamaki, K. (2007). Obesity and secondary conditions in adolescents with disabilities: Addressing the needs of an underserved population. *Journal of Adolescent Health, 41*(3), 224-229.

Rimmer, J. H., Rubin, S. S., Braddock, D. D., & Hedman, G. G. (1999). Physical activity patterns of African-American women with physical disabilities. *Medicine and Science in Sports and Exercise, 31*(4), 613-618.

Rizzo, T. L. (1984). Attitudes of physical educators toward teaching handicapped pupils. *Adapted Physical Activity Quarterly, 1*(4), 267-274.

Rizzo, T. L., So, H., & Tripp, A. (2007). Validation of the physical educators' intentions toward teaching individuals with disabilities II: Preservice survey [Abstract]. *Research Quarterly for Exercise and Sport, 78*(1), 102-103.

Salem, Y., Gropack, S. J., Coffin, D., & Godwin, E. M. (2012). Effectiveness of a low-cost virtual reality system for children with developmental delay: A preliminary randomized single-blind controlled trial. *Physiotherapy, 98*(3), 189-195.

Schreck, K. A., Williams, K., & Smith, A. F. (2004). A comparison of eating behaviors between children with and without autism. *Journal of Autism and Developmental Disorders, 34*(4), 433-438.

Sharpe, T., & Koperwas, J. (1999). *BEST: Behavioral evaluation strategy and taxonomy software* [Technical Manual]. Thousand Oaks, CA: Sage.

Shephard, R. J., & Trudeau, F. F. (2000). The legacy of physical education: Influences on adult lifestyle. *Pediatric Exercise Science, 12*(1), 34-50.

Sherrill, C. (2004). *Adapted physical activity, recreation and sport: Crossdisciplinary and lifespan* (6th ed.). New York: McGraw Hill.

Sherrill, C., & Montelione, T. (1990). Prioritizing adapted physical education goals: A pilot study. *Adapted Physical Activity Quarterly, 7*(4), 355-367.

Sideridis, G. D., Antoniou, F., & Padeliadu, S. (2008). Teacher biases in the identification of learning disabilities: An application of the logistic multilevel model. *Learning Disability Quarterly, 31*, 199-209.

Simons-Morton, B. G., Taylor, W. C., Snider, S. A., Huang, I. W., & Fulton, J. E. (1994). Observed levels of elementary and middle school children's physical activity during physical education classes. *Preventive Medicine, 23*, 437-441.

Siperstein, G., Parker, R., Bardon, J., & Widaman, K. (2007). A national study of youth attitudes toward the inclusion of students with disabilities. *Exceptional Children, 72*, 435-455.

Slepkov, H. (2008). Teacher professional growth in an authentic learning environment. *Journal of Research on Technology in Education, 41*, 85-111.

Solmon, M. A., & Lee, A. M. (1991). A contrast of planning behaviors between expert and novice adapted physical education teachers. *Adapted Physical Activity Quarterly, 8*(2), 115-127.

Steele, C. A., Kalnins, I. V., Jutai, J. W., Stevens, S. E., Bortolussi, J. A., & Biggar, W. D. (1996). Lifestyle health behaviours of 11- to 16-year-old youth with physical disabilities. *Health Education Research, 11*(2), 173-186.

Stewart-Stanec, A. D. (2009). The theory of planned behavior: Predicting teachers' intentions and behavior during fitness testing. *Journal of Teaching in Physical Education, 28*(3), 255-271.

Sukriti. G., Bhamini. R. K., & Kumaran. S. (2011). Effect of strength and balance training in children with Down's syndrome: A randomized controlled trial. *Clinical Rehabilitation, 25*(5), 425-432.

Task Force on Community Preventive Services. (2005). *The guide to community preventive services: What works to promote health?* Oxford, London: Oxford University Press.

Taylor, R. L., Smiley, L. R., & Richards, S. B. (2010). *Exceptional students: Preparing teachers for the 21st century.* New York: McGraw Hill.

Toh, C., Cutter, J., & Chew, S. (2002). School based intervention has reduced obesity in Singapore. *British Medical Journal, 324*(7334), 427.

Trasande, L., & Chatterjee, S. (2009). Corrigendum: The impact of obesity on health service utilization and costs in childhood. *Obesity*, *17*(9), 1473.

Tripp, A. (1988). Comparison of attitudes of regular and adapted physical educators toward disabled individuals. *Perceptual and Motor Skills, 66*, 425-426.

Tripp, A., & Rizzo, T. (2006). Disability labels affect physical educators. *Adapted Physical Activity Quarterly, 23*(3), 310-326.

Tripp, A., & Sherrill, C. (1991). Attitude theories of relevance to adapted physical education. *Adapted Physical Activity Quarterly, 8*(1), 12-27.

Ulrich, D. A., Burghardt, A. R., Lloyd, M., Tiernan, C., & Hornyak, J. E. (2011). Physical activity benefits of learning to ride a two-wheel bicycle for children with Down syndrome: A randomized trial. *Physical Therapy*, *91*(10), 1463-1477.

U.S. Department of Health and Human Services. (2000). *Healthy people 2010: Understanding and improving health and objectives for improving health* (2nd ed.). Washington, DC: U.S. Government Printing Office.

U.S. Department of Health and Human Services. (2008). *2008 physical activity guidelines for Americans: Be active, healthy, and happy!* Washington, DC; Author.

U.S. Department of Health and Human Services. (2010). *Healthy people 2020.* Washington, DC: U.S. Government Printing Office.

University of California at Los Angeles (UCLA) Center to Eliminate Health Disparities and Samuels & Associates. (2007). *Failing fitness: Physical activity and physical education in schools.* Policy Brief. Los Angeles: The California Endowment. Retrieved May 15, 2014 from www.calendow.org/uploadedFiles/failing_fitness.pdf

Waugh, L. (2010). *PETE professors' perceptions of teaching behaviors of effective general physical educators* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database (UMI No. 3414396).

Widman, L., McDonald, C., & Abresch, R. (2006). Effectiveness of an upper extremity exercise device integrated with computer gaming for aerobic training in adolescents with spinal cord dysfunction. *Journal of Spinal Cord Medicine, 29*(4), 363-370.

Winnick, J. P. & Short, F. X. (1999). *The Brockport physical fitness test manual.* Champaign, IL: Human Kinetics.

World Health Organization. (1995). *Physical status: the use and interpretation of anthropometry*. (Technical Report Series No. 854.). Geneva, Switzerland: Author.

World Health Organization. (2010). *Global recommendations on physical activity for health*. Geneva, Switzerland: Author.

Wright, P. W. D., & Wright, P. D. (2005). *Wrightslaw: IDEA 2004*. Hartfield, VA: Harbor House Law Press.

Wu, C., Lin, J., Hu, J., Yen, C., Yen, C., Chou, Y., & Wu, P. (2010). The effectiveness of healthy physical fitness programs on people with intellectual disabilities living in a disability institution: Six-month short-term effect. *Research in Developmental Disabilities, 31*(3), 713-717.

Yamaki, K., Rimmer, J. H., Lowry, B. D., & Vogel, L. C. (2011). Prevalence of obesity related chronic health conditions in overweight adolescents with disabilities. *Research in Developmental Disabilities: A Multidisciplinary Journal, 32*(1), 280-288.

Yuker, H. E., Block, J. R., & Campbell, W. J. (1960). *A scale to measure attitudes toward disabled persons.* Albertson, NY: Human Resources Foundation, Division of Abilities.

Zhang, T., Solmon, M. A., & Gu. X. (2012). The role of teachers' support in predicting students' motivation and achievement outcomes in physical education. *Journal of Teaching in Physical Education, 31*(4), 329-343.

Zwier, J., van Schie, P. M., Becher, J. G., Smits, D., Gorter, J., & Dallmeijer, A. J. (2010). Physical activity in young children with cerebral palsy. *Disability and Rehabilitation, 32*(18), 1501-1508.

APPENDIX A

Strength of Recommendation Taxonomy Evaluations of Major Research Literature Sources

Benefits of Physical Activity for Physical Fitness of Students With Disabilities: Fragala-Pinkham, Haley, and Goodgold (2006)

Auth	Design	Population	Instru/ Outcome/ Intrvn	Summary of Results	QOE
Fragala-Pinkham, Haley, and Goodgold (2006)	Quasi experimental within design (pre/post)	**Sample size:** 25 children with disabilities **Age (*M*):** 9.1 yrs (6-14.7 yrs) **Disability:** Neuromuschular (CP, Hemipledia, Duchenne muschular dystrophy, traumatic brain injury, Lupus and gross motor delay, congenital heart disease and gross motor delays); and developmental disabilities (ID, PDD, genetic disorder with intellectual/behavior components)	**Instrument:** Isometric muscle strength of knee extensors, hip abductors, and ankle plantarflexor; *Presidential Physical Fitness Test* (shuttle run, one mile walk/run, sit and reach, sit up, modified push up; President's Council on Physical Fitness and Sports, 1985); energy expenditure index; and pediatric evaluation of disability inventory **Outcome:** Muscle strengh and endurance; speed; cardiovascular endurance; flexibility; efficiency of walking; and mobility skill **Intrvn:** Community based physical fitness program (16 wks, 60 min/session, 2 days/wk	Improved muscular strength and endurance; improved flexibility; improved speed; improved mobility skills; and improved efficiency of walking	2

Note. Auth = author, Instru = instrument, Intrvn = intervention, QOE = quality of evidence, CP = cerebral palsy, ID = intellectual disability, PDD = pervasive developmental disability.

Benefits of Physical Activity for Physical Fitness of Students With Disabilities: Davis, Zhang, and Hodson (2011)

Auth	Design	Population	Instru/ Outcome/ Intrvn	Summary of Results	QOE
Davis, Zhang, and Hodson (2011)	Quasi experimental within design (pre/post)	**Sample size:** 25 children with disabilities **Age (*M*):** 9.6 yrs **Disability:** ID	**Instrument:** *Brockport Physical Fitness Test* (BMI, modified 16 m PACER, modified curl up, medicine ball throw, sit and reach; Winnick & Short, 1999) **Outcome:** BMI; cardiovascular endurance; muscular strength; and flexibility **Intrvn:** School based physical activity program (8 wks, 30 min/session, 5 days/wk)	Improved cardiovascular endurance; improved muscular strength and endurance; and improved flexibility	2

Note. Auth = author, Instru = instrument, Intrvn = intervention, QOE = quality of evidence, M = mean, ID = intellectual disability, PACER = progressive aerobic cardiovascular endurance run, BMI = body mass index.

Benefits of Physical Activity for Physical Fitness of Students With Disabilities: Dyer (1994)

Auth	Design	Population	Instru/ Outcome/ Intrvn	Summary of Results	QOE
Dyer (1994)	Quasi experimental within design (time series design)	**Sample size:** 10 children with disabilities **Age (*M*, range):** 13.7 yrs (8-18 yrs) **Disability:** DS	**Instrument:** Resting heart rate; blood pressure; and 3-min step test **Outcome:** Cardiovascular endurance **Intrvn:** School based physical fitness program (cardiovascular and weight training; 13 wks, 60 min/session, 4 days/wk)	Improved cardiovascular endurance	2

Note. Auth = author, Instru = instrument, Intrvn = intervention, QOE = quality of evidence, M = mean, DS = Down syndrome.

Benefits of Physical Activity for Physical Fitness of Students With Disabilities: Fragala-Pinkham, Haley, and O'Neill (2008)

Auth	Design	Population	Instru/ Outcome/ Intrvn	Summary of Results	QOE
Fragala-Pinkham, Haley, and O'Neill (2008)	Quasi experimental within design (pre/post)	**Sample size:** 16 children with disabilities **Age (*M*, range):** 9.6 yrs (6-12 yrs) **Disability:** Various disabilities (developmental delay, CP, Myelomeningocele, DS, LD, HFA, autism with ADD, Otopalatodigital syndrome with ADD, PDD-NOS)	**Instrument:** Half mile walk/run; isometric muscle strength test of non dominant knee extensors, knee flexor, hip abductors, and ankle plantarflexors; modified curl up from the *Brockport Physical Fitness Test* (Winnick & Short, 1999); multidimentional pediatric evaluation of disability inventory functional skills (floor to stand); mobility scale; polar hr monitors; and self report from participants or parents **Outcome:** Cardiovascular endurance; muscle strength; gross motor skills; and heartrate **Intrvn:** Community based group aquatic exercise program (14 wks, 50 min/session, 2 days/wk)	Improved cardiova-ular endurance	2

Note. Auth = author, Instru = instrument, Intrvn = intervention, QOE = quality of evidence, M = mean, CP = cerebral palsy, DS = Down syndrome, LD = learning disorder, HFA = high functioning autism, ADD = attention deficit disorder, PDD-NOS = pervasive developmental disorder not otherwise specified.

Benefits of Physical Activity for Physical Fitness of Students With Disabilities: Darrah, Wessel, Nearingburg, and O'Connor (1999)

Auth	Design	Population	Instru/ Outcome/ Intrvn	Summary of Results	QOE
Darrah, Wessel, Nearingburg, and O'Connor (1999)	Quasi experimental within design (pre/post)	**Sample size:** 23 children with disabilities **Age (*M*, range):** 14.2 yrs (11-20 yrs) **Disability:** CP	**Instrument:** Energy expenditure index; isometric strength of hip abductors and extensors, knee extensors, and shoulder flexors measured with hand held dynamometer; sit and reach test, behind the back reach, and intermalleolar distance; standardized suhmaximal exercise; self perception profiles for adolescents; and self perception profiles for children **Outcome:** Efficiency of walking; muscle strength; flexibility; heart rate; and perception of physical appearance **Intrvn:** Community based physical fitness program (10 wks, 70-90 min/session, 3 days/wk)	Improved muscular strength	2

Note. Auth = author, Instru = instrument, Intrvn = intervention, QOE = quality of evidence, M = mean, CP = cerebral palsy.

Benefits of Physical Activity for Physical Fitness of Students With Disabilities: Gorter, Holty, Rameckers, Elvers, and Oostendorp (2009)

Auth	Design	Population	Instru/ Outcome/ Intrvn	Summary of Results	QOE
Gorter, Holty, Rameckers, Elvers, and Oostendorp (2009)	Quasi experimental within design (pre/post)	**Sample size:** 13 children with disabilities **Age (*M*, range):** 9.9 yrs (8-13 yrs) **Disability:** CP with and without mild ID	**Instrument:** *Bruce Treadmill Test* (Bruce, Kusumi, & Hosmer, 1973), 6-min run test; and timed up and down stairs test **Outcome:** Cardiovascular endurance; and mobility skills **Intrvn:** School based exercise (repetetive stations with cardio activities, circuit training; 9 wks, 30 min/session, 2 days/wk)	Improved cardiovascul -arular endurance; and improved mobility skills	2

Note. Auth = author, Instru = instrument, Intrvn = intervention, QOE = quality of evidence, M = mean, CP = cerebral palsy, ID = intellectual disability.

Benefits of Physical Activity for Physical Fitness of Students With Disabilities: Sukriti, Bhamini, and Kumaran (2010)

Auth	Design	Population	Instru/ Outcome/ Intrvn	Summary of Results	QOE
Sukriti, Bhamini, and Kumaran (2010)	Experimental between design (pre/post randomized controlled trial)	**Sample size:** 23 children with disabilities **Age (*M*, range):** 13.25 yrs (10-14 yrs) **Disability:** DS	**Instrument:** Handheld dynamometer; isometric of hip flexors, hip abductors, hip extensors, knee flexors, knee entensors, and ankle plantar flexors; and *Bruininks Oseretsky Test of Motor Proficiency* (Bruininks & Bruininks, 2005) **Outcome:** Muscle strength; balance **Intrvn:** Exercise training (progressive resistance exercise for the lower limb starting 50% of 1RM; balance training; 6 wks, 3 days/wk)	Improved muscular strength; and improved balance	1

Note. Auth = author, Instru = instrument, Intrvn = intervention, QOE = quality of evidence, M = mean, DS = Down syndrome, RM = repetition maximum.

Benefits of Physical Activity for Physical Fitness of Students With Disabilities: Widman, McDonald, and Abresch (2006)

Auth	Design	Population	Instru/ Outcome/ Intrvn	Summary of Results	QOE
Widman, McDonald, and Abresch (2006)	Quasi experimental within design (pre/post)	**Sample size:** 8 children with disabilities **Age (*M*):** 16.5 yrs **Disability:** Spina bifida	**Instrument:** Vo^2peak and anaerobic threshold (AT) **Outcome:** Aerobic capacity **Intrvn:** Interactive exercise game (gamecycle; video game and erogometer exercise for wheelchair users; 16 wks, 20 min/session, 3 days/wk)	Improved aerobic capacity	2

Note. Auth = author, Instru = instrument, Intrvn = intervention, QOE = quality of evidence, M = mean.

Benefits of Physical Activity for Physical Fitness of Students With Disabilities: Giagazoglou et al. (2013)

Auth	Design	Population	Instru/ Outcome/ Intrvn	Summary of Results	QOE
Giagazoglou et al. (2013)	Experimental between design (pre/post randomized controlled trial)	**Sample size:** 18 children with disabilities **Age (*M, SD*):** 10.3±1.6 yrs **Disability:** ID (mild to moderate)	**Instrument:** *Eurofit Test Battery*; standing long jump test, vertical jump test; sit and reach test; and foot pressure platform **Outcome:** Overall physical fitness; power; flexibility; and balance **Intrvn:** Trampoline training (individualized; basic exercise using assistive equipment such as balls and balloons; 12 wks, 20 min daily)	Improved flexibility; and improved power	1

Note. Auth = author, Instru = instrument, Intrvn = intervention, QOE = quality of evidence, M = mean, SD = standard deviation, ID = intellectual disability.

Benefits of Physical Activity for Physical Fitness of Students With Disabilities: Khalili and Elkins (2009)

Auth	Design	Population	Instru/ Outcome/ Intrvn	Summary of Results	qoe
Khalili and Elkins (2009)	Experimental between design (pre/post randomized controlled trial)	**Sample size:** 44 children with disabilities **Age (*M*, range):** 11.7 yrs **Disability:** ID and DS	**Instrument:** Spirometry; forced expiratory volume; and forced vital capacity **Outcome:** Lung functions **Intrvn:** Aerobic exercise (walking, running, cycling 10 min for each with no break; 8 wks, 30 min/session, 5 days/wk)	Improved lung functions	1

Note. Auth = author, Instru = instrument, Intrvn = intervention, QOE = quality of evidence, M = mean, ID = intellectual disability, DS = Down syndrome.

Benefits of Physical Activity for Physical Fitness of Students With Disabilities: Salem, Gropack, Coffin, and Godwin (2011)

Auth	Design	Population	Instru/ Outcome/ Intrvn	Summary of Results	QOE
Salem, Gropack, Coffin, and Godwin (2011)	Experimental between design (blinded randomized controlled)	**Sample size:** 40 children with disabilities **Age (*M*, range):** 48.6 m (39-58 m) **Disability:** Developmental delay (no genetic defect, no autism, no attention deficit disorder)	**Instrument:** 20-m walking test; balance tests (timed-up-and-go test, single leg stance test, five-times-sit-stand test); timed-up-and down-stairs test; 2-min-walk test; grip strength; and gross motor function measure **Outcome:** Speed; balance; mobility; cardiovascular endurance; muscular strength and endurance; and gross motor skill **Intrvn:** Therapuetic virtual reality game (10 wks, 30 min/session, 2 days/wk)	Improved muscular strength and endurance; and improved balance	1

Note. Auth = author, Instru = instrument, Intrvn = intervention, QOE = quality of evidence, M = mean.

Obesity in Children With Disabilities: Reinehr et al. (2010)

Auth	Design	Population	Database/ Keyword	Summary of Results	QOE
Reinehr et al. (2010)	Systematic review	**Number of articles:** 38 peer reviewed articles **Age (*M*):** 11.7 yrs **Disability:** ID and DS	**Database:** Medline **Keyword:** Children/or/ adolescents/and/ disability/and/ overweight/or /obesity	The prevalence of overweight and obesity in children with disabilities was almost twice higher than in their nondisabled peers Little is known for effective, long-lasting interventions for children with disabilities who were obese	2

Note. Auth = author, M = mean, QOE = quality of evidence, ID = intellectual disabilities, DS = Down syndrome.

Obesity in Children With Disabilities: Dair, Ellis, and Lieberman (2006)

Auth	Design	Population	Measurement	Summary of Results	QOE
Dair, Ellis, and Lieberman (2006)	Descriptive study	**Sample size:** 151 deaf children **Age (range):** 6-11 yrs **Disability:** Deaf	**Measurement:** BMI (height and weight)	The prevalence of overweight was higher in deaf children compared to national averages 20% of boys was overweight while 20.4% in girls	2

Note. Auth = author, QOE = quality of evidence, BMI = body mass index.

Obesity in Children With Disabilities: Neter et al. (2011)

Auth	Design	Population	Measurement	Summary of Results	QOE
Neter et al. (2011)	Descriptive study	**Sample size:** 85 children with disabilities 4,072 children without disabilities **Age (*M, SD*):** Children with disabilities = 8.8 yrs (2.5) Children without disabilities = 8.1 yrs (2.3) **Disability:** Disabilities was not specified	**Measurement:** BMI (height and weight)	The prevalence of overweight and obesity among children with disabilities was 30.6% and 10.6%, respectively The obesity rate of children with disabilities was three to six times higher than in children without disabilities	2

Note. Auth = author, M = mean, SD = standard deviation, QOE = quality of evidence, BMI = body mass index.

Obesity in Children With Disabilities: Pitetti, Yarmer, and Fernhall (2001)

Auth	Design	Population	Measurement	Summary of Results	QOE
Pitetti, Yarmer, and Fernhall (2001)	Descriptive study	**Sample size:** Children with disabilities (males = 169, females = 99) Children without disabilities (males = 289, females = 317) **Age (range):** 8-18 yrs **Disability:** Disability was not specified	**Measurement:** BMI (height and weight)	Children with intellectual disabilities had higher BMI than their peers without intellectual disabilities	2

Note. Auth = author, QOE = quality of evidence, BMI = body mass index.

Obesity in Children With Disabilities: Bandini, Curtin, Hamad, Tybor, and Must (2005)

Auth	Design	Population	Measurement	Summary of Results	QOE
Bandini, Curtin, Hamad, Tybor, and Must (2005)	Descriptive study (secondary data analysis)	**Sample size:** 1,128 children with developmental disorders **Age (range):** 6-17 yrs **Disability:** Children with physical limitations, attention deficit disorder, learning disability, and those receiving special education or early intervention services	**Measurement:** BMI (height and weight)	The prevalence of at risk for overweight and overweight among children with disabilities was higher than their peers without disabilities The higher prevalence of overweight in girls with learning disabilities was higher than girls without learning disabilities	2

Note. Auth = author, QOE = quality of evidence, BMI = body mass index.

Obesity in Children With Disabilities: Curtin, Bandini, Perrin, Tybor, and Must (2005)

Auth	Design	Population	Measurement	Summary of Results	QOE
Curtin, Bandini, Perrin, Tybor, and Must (2005)	Descriptive study	**Sample size:** 140 children with disabilities **Age (range):** 3-18 yrs **Disability:** Children with ADHD or ASD	**Measurement:** BMI (height and weight)	The prevalence of overweight and obesity among children with ADHD was 29% and 17.3%, respectively The prevalence of overweight and obesity in children with ASD was 35.7%, and 19%, respectively The prevalence of overweight among children with ADHD and with ASD was similar to children without disabilities	2

Note. Auth = author, QOE = quality of evidence, BMI = body mass index, ADHD = attention deficit hyperactivity disorder, ASD = autism spectrum disorders.

Physical Activity Levels of Children With and Without Disabilities: Zwier et al. (2010)

Auth	Design	Population	Measurement	Summary of Results	QOE
Zwier et al. (2010)	Descriptive study	**Sample size:** 97 children with CP 57 children without disabilities **Age (range):** 5-7 yrs **Disability**: CP	**Measurement:** Standardized questionnaires; and international classification of functioning, disability, and health **Outcome:** Level of physical activity (hours spent on sports and physical activity per week); MET intensity level; and contextual factors	Most children with CP had lack of physical active partcipation; early age and lower educational level of the mother were associated with physical inactivity for children with CP	2

Note. Auth = author, QOE = quality of evidence, CP = cerebral palsy, MET = metabolic equivalent of task.

Physical Activity Levels of Children With and Without Disabilities: Steele et al. (2010)

Auth	Design	Population	Measurement	Summary of Results	QOE
Steele et al. (2010)	Descriptive study (secondary data analysis)	**Sample size:** 104 youth with physical disabilities 7,020 youth without disabilities (Canadian national sample) **Age (range):** 11-16 yrs **Disability:** Amputee or congenital limb deficit; CP; juvenile rheumatoid arthritis; muscular dystrophy; spina bifida; and others	**Measurement:** *Health Behaviors in School-aged Children* (Currie, Zanotti, Morgan, Currie, & de Looze, 2012) **Outcome:** Health status; and lifestyle health behavior	Youth with physical disabilities were equally healthy compared to the national sample; but frequently experienced symptoms of poor health such as headaches, stomach aches and backaches; less likely to smoke, drink alcohol, and use marijuana than youth without disabilities; and less healthy diets, less exercise, and more physical inactivity	2

Note. Auth = author, QOE = quality of evidence, CP = cerebral palsy, WHO = world health organization.

Physical Activity Levels of Children With and Without Disabilities: Hinckson and Curtis (2013)

Auth	Design	Population	Measurement	Summary of Results	QOE
Hinckson and Curtis (2013)	Systematic review	**Number of articles:** 30 peer reviewed journals **Sample:** Children with ID **Age (range)**: 5-18 yrs **Disability:** ID	**Databases:** MEDLINE, PubMed, Scopus, CINAHL Plus with Full Text, and SPORT Discus **Outcome:** Assessments of physical activity; and physical activity levels of children with ID	No ideal assessment instruments for children with ID; and direct observation might be recommended Consistant findings across studies showed children with ID were inactive compared to children without disabilities	2

Note. Auth = author, QOE = quality of evidence, ID = intellectual disabilites.

Theory of Planned behavior Applied in General Physical Education: Martin, Kulinna, Eklund, and Reed (2001)

Auth	Design	Population	Measurement	Summary of Results	QOE
Martin, Kulinna, Eklund, and Reed (2001)	Observational research **Framework:** Theory of planned behavior	**Sample size:** 187 physical educators **Target behavior**: Teaching physically active physical education for students **Disability:** N/A	**Measurement:** Questionnaire **Outcome:** Behavior; intention; attitude toward behavior; subjective norm; perceived behavioral control; and self-efficacy	Attitude and subjective norm were associated with intention Attitude and subjecitve norm predicted physical educators' intentions accounting for 65% of the variance in the intention; however, self-efficacy was not predictive of the intention	2

Note. Auth = author, QOE = quality of evidence.

Theory of Planned behavior Applied in General Physical Education: Martin and Kulinna (2004)

Auth	Design	Population	Measurement	Summary of Results	QOE
Martin and Kulinna (2004)	Observational research **Framework:** Theory of planned behavior	**Sample size:** 342 physical educators **Age (range)**: 23-62 yrs **Target behavior**: Teaching at least 50% of class time devoted to moderate to vigorous physical activities **Disability:** N/A	**Measurement:** Questionnaires **Outcome:** Behavior; intention; attitude toward behavior; subjective norm; perceived behavioral control; self-efficacy; and program goal importance	Attitude, subjecitve norm, and perceieved behavioral control were associated with intention and contributed to the prediction of intentions of physical educators Attitude and perceived behavioral control were the most influential factors to intentions; and self-efficacy and program goal importance were correlated with the intention	2

Note. Auth = author, QOE = quality of evidence.

Theory of Planned behavior Applied in General Physical Education: Martin and Kulinna (2005)

Auth	Design	Population	Measurement	Summary of Results	QOE
Martin and Kulinna (2005)	Observational research **Framework:** Theory of planned behavior	**Sample size:** 342 physical educators (males = 43, females = 270 **Age**: 23-62 yrs **Target behavior**: Teaching at least 50% of class time devoted to moderate to vigorous physical activities **Disability:** N/A	**Measurement:** Questionnaires; and *System for Observing Fitness Time Instrument* (SOFIT; McKenzie el al., 2005) **Outcome:** Behavior; intention; attitude toward behavior; subjective norm; perceived behavioral control; and self-efficacy	Negative relationship between intention and behavior of general physical educators Attitude and subjective norm were the predictive variables of intention; and about 60% of variance in intention were explained by attitude and subjecitve norm Influence of perceived behavioral control was small only accounting addtional 4% of the variance in intention	2

Note. Auth = author, QOE = quality of evidence.

Theory of Planned behavior Applied in General Physical Education: Conatser, Block, and Gansneder (2002)

Auth	Design	Population	Measurement	Summary of Results	QOE
Conaster, Block, and Gansneder (2002)	Observational research **Framework:** Theory of planned behavior	**Sample size:** 111 aquatic instructors (males = 29, female = 82) **Target behavior**: Teaching swimming to individuals with disabilities in inclusive settings **Disability:** N/A	**Measurement:** *Aquatic Instuctors' Beliefs Toward Inclusion* (AIBTI; Conatser, Block, & Gansnede, 2002) **Outcome:** Behavior; intention; attitude toward behavior (behavioral belief); subjective norm (normative belief); and perceived behavioral control (control belief)	Control belief was the most predictive variable followed by behavioral belief about including students with mild disabilities in their aquatic program; and control belief explained the largest portion of variance of the intention while behavioral belief and normative belief that were the next most influential variables	2

Note. Auth = author, QOE = quality of evidence.

Theory of Planned behavior Applied in General Physical Education: Stewart-Stanec (2009)

Auth	Design	Population	Measurement	Summary of Results	QOE
Stewart-Stanec (2009)	Observational research **Framework:** Theory of planned behavior	**Sample size:** 195 physical educators (males = 70, female = 125) **Target behavior**: Adiministrating physical fitness test effectively **Disability:** N/A	**Measurement:** *Teachers' Intention to Administer Physical Fitness Tests Effectively* (Stewart-Stanec, 2009) **Outcome:** Behavior; intention; attitude toward behavior (behavioral belief); subjective norm (normative belief); and perceived behavioral control (control belief)	Attitude and perceived control were significant predictors of intentions to effectively administer fitness tests and explained by 31.2% of the variance of intention Attitude was the only contributing variable that explained 5.38% of the variance in actual behavior	2

Note. Auth = author, QOE = quality of evidence.

Theory of Planned behavior Applied in General Physical Education: Fournidou, Kudlacek, and Evagellinou (2011)

Auth	Design	Population	Measurement	Summary of Results	QOE
Fournidou, Kudlacek, and Evagellinou (2011)	Observational research **Framework:** Theory of planned behavior	**Sample size:** 100 physical educators (males = 53, females = 47) **Target behavior**: Teaching students with disabilities in inclusive physical education **Disability:** N/A	**Measurement:** *Attitudes Toward Teaching Individuals With Physical Disabilities in Physical Education* (ATIPDPE-GR; Kudlacek, Valkova, Sherrill, Myers, & French, 2002) **Outcome:** Behavior; intention; attitude toward behavior (behavioral belief); subjective norm (normative belief); and perceived behavioral control (control belief)	Perceived behavior and attitude toward behavior were significant predictors of the intentions of general physical educators to teach students with disabilities in inclusive physical education classes	2

Note. Auth = author, QOE = quality of evidence.

Theory of Planned behavior Applied in General Physical Education: Jeong and Block (2011)

Auth	Design	Population	Measurement	Summary of Results	QOE
Jeong and Block (2011)	Observational research **Framework:** Theory of planned behavior	**Sample size:** 220 physical educators **Target behavior**: Physical educators' intentions to teach students with disabilities **Disability:** N/A	**Measurement:** *Physical Educators' Intention Toward Teaching Individuals With Disabilities* (PEITID; Rizzo, So, & Tripp, 2007) **Outcome:** Behavior; intention; attitude toward behavior (behavioral belief); subjective norm (normative belief); and perceived behavioral control (control belief)	Behavioral belief, normative belief, control belief, attitude, subjective norm, and perceived behavioral control contributed to the prediction of intention to teach students with intellectual disabilities Attitude and behavioral belief were the strongest predictors of intention (25.9%, 38.1%, respectively) Intention was only a predictor of the behavior	2

Note. Auth = author, QOE = quality of evidence.

Theory of Planned behavior Applied in General Physical Education: Burak, Rosenthal, and Richardson (2013)

Auth	Design	Population	Measurement	Summary of Results	QOE
Burak, Rosenthal, and Richardson (2013)	Observational research **Framework:** Theory of planned behavior	**Sample size:** 345 college students in general physical education majors **Target behavior**: Using exercise as punishment **Disability:** N/A	**Measurement:** Questionnaire **Outcome:** Behavior; intention; attitude toward behavior (behavioral belief); and subjective norm (normative belief)	Attitude toward behavior and subjective norm were the major contributors to predict the intentions of preservice general physical educators to use exercise as punishment	2

Note. Auth = author, QOE = quality of evidence.

Theory of Planned behavior Applied in General Physical Education: Richardson, Rosenthal, and Burak (2012)

Auth	Design	Population	Measurement	Summary of Results	QOE
Richardson, Rosenthal, and Burak (2012)	Observational research **Framework:** Theory of planned behavior	**Sample size:** 189 physical educators/coaches **Target behavior**: Using exercise as punishment **Disability:** N/A	**Measurement:** Questionnaire **Outcome:** Behavior; intention; attitude toward behavior (behavioral belief); and subjective norm (normative belief)	Physical educators/coaches' intentions were predicted by attitude and subjective norm but not perceived behavioral control Attitude was the most predictive variable; and subjective norm was the next most predictive variable	2

Note. Auth = author, QOE = quality of evidence.

Attitude of Adapted Physical Educators: Tripp (1988)

Auth	Design	Population	Measurement	Summary of Results	QOE
Tripp (1988)	Observational research **Framework:** Theory of planned behavior	**Sample size:** 47 adapted physical educators 38 general physical educators **Age (*M*):** 35.5 yrs for general physical educators 40.2 yrs for adapted physical educators **Disability:** N/A	**Measurement:** *Attitude Toward Disabled Persons Scale* (Yuker, Block, & Campbell, 1960) **Outcome:** Attitude toward a person with disabilities; and preference for 10 disability conditions	Adapted physical educators and general physical educators had unfavorable attitudes toward individuals with disabilities Both groups of teachers were more accepting of individuals with physical disabilities than individuals who had intellectual disabilities or an emotional disturbance	2

Note. Auth = author, M = mean, QOE = quality of evidence.

Adapted Physical Educators' Concerns About Their Roles and Responsibilities: Hodge and Akuffo (2007)

Auth	Design	Population	Measurement	Summary of Results	QOE
Hodge and Akuffo (2007)	Qualitative descriptive study (collective case-study)	**Sample size:** 6 adapted physical educators **Teaching Experience:** 4-14 yrs **Disability:** N/A	**Measurement:** Individual indepth interview **Outcome:** Concerns of teachers about teaching students with disabilities	The common concerns reported were a large class size, a lack of adequate equipment, a lack of teaching place (i.e., limited gymnasium space, no gym time allocated for adapted physical education, and an unexpected pull-out from the gym in the middle of the lesson), a negative attitude and behavior of paraeducators during adapted physical education classes, a large caseload, a lack of administrative support, excessive administrative work, a lack of respect from other school personnel (e.g., administrators, special educators, physical educators, classroom teachers, paraeducators), excessive transition from site to site, difficulty in moving equipment from one's own car to the gym, and a lack of inservice in adapted physical education	2

Note. Auth = author, QOE = quality of evidence.

Adapted Physical Educators' Concerns About Their Roles and Responsibilities: Krueger, DiRocco, and Felix (2000)

Auth	Design	Population	Measurement	Summary of Results	QOE
Krueger, DiRocco, and Felix (2000)	Qualitative descriptive study (collective case-study)	**Sample size:** 155 adapted physical educators **Teaching Experience:** 4-14 yrs **Disability:** N/A	**Measurement:** Questionnaire **Outcome:** Barriers or obstacles of adapted physical educators to teach students with disabilities	Adapted physical educators' perceived barriers or obstacles were a lack of transportation, social isolation of students with disabilities from their peers, budget restrictions, a lack of adapted equipment, a lack of collaboration with other school personnel (e.g., general physical education and special education teachers), a lack of recreation opportunities for students with disabilities, a lack of communication skills of students with disabilities, a lack of time to participate in community physical activity programs, and a lack of parents' or caregivers' support	2

Note. Auth = author, QOE = quality of evidence.

Levels of Expertise and Experience: Solmon and Lee (1991)

Auth	Design	Population	Measurement	Summary of Results	QOE
Solmon and Lee (1991)	Qualitative descriptive study	**Sample size:** 8 adapted physical educators (4 experienced teachers, 4 novice) **Teaching Experience:** Experts (7-10 yrs) Novice (had taken all methods courses in the physical education teacher education program **Disability:** N/A	**Measurement:** Observation; questionnaire **Outcome:** Teaching patterns; and lesson plans	Experienced adapted physical educators were more likely than preservice adapted physical educators to develop a lesson plan that was flexible and student-centered Lesson plans developed by experienced adapted physical educators provided more optional or alternative physical activities on a basis of students' needs and also more physical activity choices for students than the inexperienced	2

Note. Auth = author, QOE = quality of evidence.

Levels of Expertise and Experience: Everhart et al. (2013)

Auth	Design	Population	Measurement	Summary of Results	QOE
Everhart et al. (2013)	Qualitative descriptive study	**Sample size:** 11 preservice adapted physical educators 2 expert adapted physical educators **Teaching Experience:** Experts (20 yrs teaching Experience) Senior health and physical education preservice teachers **Disability:** N/A	**Measurement:** *Behavioral Evaluation Strategy and Taxonomy* (Sharpe, & Koperwas, 1999) **Outcome:** Teaching behavior pattern	Teaching behaviors were similar in expert and novice adapted physical educators; and both groups were engaged in actual teaching moments (e.g., giving a corrective, positive feedback, or physical assistance) more than class management (e.g., intervening inappropriate behavior, setting up equipment) during the class The most frequent teaching behavior observed was an instruction-guidance instruction pattern for the experts; whereas, in the novice, a corrective feedback-instruction guidance pattern was used	2

Note. Auth = author, QOE = quality of evidence.

General Physical Education Programs With Students with Disabilities: Nader (2003)

Auth	Design	Population	Measurement	Summary of Results	QOE
Nader (2003)	Observational research	**Sample size:** 814 children (boys = 414, girls = 400) **Age (*M*):** 9 yrs **Disability:** N/A	**Measurement:** *System for Observing Fitness Instruction Time* (SOFIT; McKenzie el al., 2005); and heart rate (each child was observed during one physical education class) **Outcome:** Physical activity levels	For approximately 5 min chidren were engaged in very vigorous physical activity while for 12 min children were engaged in moderate physical activity during the physical education Children were provided 25 min per week with moderate to vigorous physical activities during school physical education	2

Note. Auth = author, M = mean, QOE = quality of evidence.

General Physical Education Programs With Students with Disabilities: Simon et al. (1994)

Auth	Design	Population	Measurement	Summary of Results	QOE
Simon et al. (1994)	Observational research	**Sample size:** 400 children (boys = 187, girls = 213) **Age:** Not provided **Disability:** N/A	**Measurement:** Observation (instrument information was not provided) **Outcome:** Physical activity levels	The average moderate to vigorous physical activity levels among elementary and middle school children were 8.6%, 16.1%, respectively while the national average was 27%	2

Note. Auth = author, QOE = quality of evidence.

General Physical Education Programs With Students with Disabilities: University of California at Los Angeles (UCLA) Center (2007)

Auth	Design	Population	Measurement	Summary of Results	QOE
UCLA Center (2007)	Observational research	**Sample size:** 7 schools (*N* = 28 fourth-grade classes) in one district **Disability:** N/A	**Measurement:** Self administered survey; telephone and in-person interviews; and environmental audits **Outcome:** Physical activity levels	The moderate to vigorous physical activity time in physical education was 45 min per week in elementary, 80 min in middle school, and 110 min in high school More than half of 30 min physical education, students spent being sedentary; and only four min of every half hour involved vigorous activity	2

Note. Auth = author, QOE = quality of evidence.

General Physical Education Programs With Students with Disabilities: McKenzie, Sallis, Faucette, Roby, and Kolody (1993)

Auth	Design	Population	Measurement	Summary of Results	QOE
McKenzie, Sallis, Faucette, Roby, and Kolody (1993)	Experimental research (random assigment)	**Sample size:** 77 public schools **Age:** Not provided **Disability:** N/A	**Measurement:** *System for Observing Fitness Instruction Time* (SOFIT; McKenzie el al., 2005) **Outcome:** Student physical activity levels; and quality and quantity of instruction provided by teachers	Significant differences in the average length of class time for student being physically active between 3 conditions (i.e., trained classroom teachers, physical education specialists, control): Students spent 13.7 min in MVPA during the average of 26.7 min physical education class; students spent 10.8 min in MVPA during the average of 23.4 min class managed by trained classroom teachers; and students spent 8.7 min in MVPA during the average of 18.9 min regular class managed by the control group of classroom teachers	1

Note. Auth = author, QOE = quality of evidence, MVPA = moderate to vigorous physical activity.

Roles and Responsibilities of Adapted Physical Educators: Kudlacek, Jesina, Sterbova, and Sherrill (2008)

Auth	Design	Population	Measurement	Summary of Results	QOE
Kudlacek, Jesina, Sterbova, and Sherrill (2008)	Qualitative observational research	**Sample size:** 6 females and 2 males **Teaching Exeprience (range):** 2-23 yrs **Disability:** N/A	**Measurement:** Interview **Outcome:** Caseload; role of work; role in decision making; and challenges	The concerns reported were a large class size, a lack of adequate equipment, a lack of teaching settings, a negative attitude and behavior of paraeducators during adapted physical education classes, a large caseload, a lack of administrative support, excessive administrative work, a lack of respect from other school, excessive transition from site to site, difficulty in moving equipment from one's own car to the gym, and a lack of inservice in adapted physical education	2

Note. Auth = Author, QOE = Quality of evidence.

Roles and Responsibilities of Adapted Physical Educators: Dillon and Sherrill (2003)

Auth	Design	Population	Measurement	Summary of Results	QOE
Dillon and Sherrill (2003)	Qualitative observational research	**Sample size:** 66 adapted physical educators (males = 13, females = 53) **Age (*M*, range):** 39.5 yrs (24-61 yrs) **Teaching Exeprience (range):** 1-40 yrs **Disability:** N/A	**Measurement:** Self reported survey **Outcome:** Caseload; and role and responsibilities of work	Adapted physical educators spent 43% of their work in instructing students while they spent 38% of work in planning and preparing instruction, traveling, assessing students, completing special education paperwork, and participating in the individualized education program process 6% of time was spent consulting or assisting general physical educators in teaching students with disabilities	2

Note. Auth = author, QOE = quality of evidence.

Roles and Responsibilities of Adapted Physical Educators: Bowers (2009)

Auth	Design	Population	Measurement	Summary of Results	QOE
Bowers (2009)	Qualitative observational research	**Sample size:** 10 professors of master's degree programs in adapted physical activity, adapted physical education, and/or special physical education **Disability:** N/A	**Measurement:** *Performance based Teaching Behaviors of General and Adapted Physical Educators* **Outcome:** Expected competencies for highly qualified adapted physical educators	92 of the 145 subcategories (63%) were important or very important competencies to be highly qualified adapted physical educators within the categories of curricular knowledge; content knowledge; assessment; planning and management; instruction; communication; collaboration, reflection, leadership, and professionalism; and mentoring, peer/student teaching, and paraprofessionals	2

Note. Auth = author, QOE = quality of evidence.

Roles and Responsibilities of Adapted Physical Educators: Kelly and Gansneder (1998)

Auth	Design	Population	Measurement	Summary of Results	QOE
Kelly and Gansneder (1998)	Descriptive study	**Sample size:** 293 adapted physical educators **Teaching Exeprience (*M*, range):** 9.6 yrs (1-30 yrs) **Disability:** N/A	**Measurement:** Self reported survey **Outcome:** Caseload; and role and responsibilities of work	Adapted physical educators needed inservices in the areas of instruction, motor development, and transition education Average caseload was 104 students and the average of 36.1 hr per week (serving an average of 4.4 schools) while 52% of work time was spent providing direct adapted physical education service; and 26% of work time was spent providing indirect services (e.g., travel, paperwork, IEP meeting)	2

Note. Auth = author, M = mean, QOE = quality of evidence, IEP = individual education program.

Roles and Responsibilities of Adapted Physical Educators: Obrusnikova and Kelly (2009)

Auth	Design	Population	Measurement	Summary of Results	QOE
Obrusnikova and Kelly (2009)	Descriptive study	**Sample size:** 139 adapted physical educators (males = 39, females = 100) **Age (*M*, range):** 41.2 yrs (23-61 yrs) **Teaching Exeprience (M, range):** 13.7 yrs (0-30 yrs) **Disability:** N/A	**Measurement:** Web based survey **Outcome:** Caseload; and role and responsibilities of work	Adapted physical education worked 41.2 hr per week while 52.3% of work time was spent providing direct service; and 13.8% of work time was spent providing indirect services (e.g., travel, paperwork, IEP meeting) Adapted physical educators reported an average caseload of 51 students (42 students receieved direct service and 9 students received indirect services; e.g., consulting)	2

Note. Auth = author, M = mean, QOE = quality of evidence.

Roles and Responsibilities of Adapted Physical Educators: Akuffo and Hodge (2008)

Auth	Design	Population	Measurement	Summary of Results	QOE
Akuffo and Hodge (2008)	Qualitative descriptive study (explanatory multiple case study design)	**Sample size:** 6 adapted physical educators **Age (*M*, range)**: 43 yrs (30-48 yrs) **Disability:** N/A	**Measurement:** Questionniare; open ended questions; and focus group interview **Outcome:** Role and responsibility of adapted physical educators (teaching as obligatory; self-reliant; teaching effectiveness)	The primary role of adapted physical educators in the urban school district was to independently provide direct instruction to students with various types of disabilities Their responsibilities reported were: assessment, development of individualized education programs, development of lesson plans, class organization and management, safety assurance, and communication with other educational personnel (e.g., special education teachers, general physical educators) and parents	2

Note. Auth = author, M = mean, QOE = quality of evidence.

APPENDIX B

Questionnaire in Phase I: Elicitation

PREVIEW MODE: Responses will NOT be stored.

Intention to Teach Physically Active Adapted Physical Education Classes to Children and Youth

Introduction

Instruction

Please take a few minutes to tell us what you think about the possibility of ***teaching moderate to vigorous physical activities at least 50% of the time in your adapted physical education classes.*** There are no right or wrong responses; we are merely interested in your personal opinions. In response to the questions below, please list the thoughts that come immediately to mind.

The term MODERATE physical activity refers to activities equivalent in intensity to brisk walking, bicycling, or household chores.

The term VIGOROUS physical activity refers to activities equivalent in intensity to running, fast cycling, fast swimming, or moving heavy loads (Centers for Disease Control and Prevention, 2006).

Belief Questions

♦ Your belief regarding the consequences of teaching moderate to vigorous physical activities at least 50% of the time in your adapted physical education classes for your students with disabilities (Behavioral Belief).

1) What do you believe are the ADVANTAGES for you teaching moderate to vigorous physical activities at least 50% of the time in your adapted physical education classes for your students with disabilities?

(1000 characters remaining)

2) What do you believe are the DISADVANTAGES for you teaching moderate to vigorous physical activities at least 50% of the time in your adapted physical education classes for your students with disabilities?

(1000 characters remaining)

3) Is/are there any other consequence(s) associated with teaching moderate to vigorous physical activities at least 50% of the time in your adapted physical education classes for your students with disabilities?

(1000 characters remaining)

Your perception of individuals or groups that impact whether you should or should NOT teach moderate to vigorous physical activities at least 50% of the time in your adapted physical education classes for your students with disabilities (Normative Belief).

4) Are there any individuals or groups who would APPROVE of you teaching moderate to vigorous physical activities at least 50% of the time in your adapted physical education classes for your students with disabilities?

(1000 characters remaining)

5) Are there any individuals or groups who would DISAPPROVE of you teaching moderate to vigorous physical activities at least 50% of the time in your adapted physical education classes for your students with disabilities?

(1000 characters remaining)

6) Is/are there any other individual(s) or group(s) who come to mind when you think about teaching moderate to vigorous physical activities at least 50% of the time in your adapted physical education classes for your students with disabilities?

(1000 characters remaining)

♦ Your beliefs about the presence of factors or circumstance that enables you to have adequate or lack of control over you teaching moderate to vigorous physical activities at least 50% of the time in your adapted physical education classes for your students with disabilities (Control Belief).

7) What factors or circumstances make it EASIER or ENABLE you to teach moderate to vigorous physical activities at least 50% of the time in your adapted physical education classes for your students with disabilities?

(1000 characters remaining)

8) What factors or circumstances make it more DIFFICULT or PREVENT you from teaching moderate to vigorous physical activities at least 50% of the time in your adapted physical education classes for your students with disabilities?

(1000 characters remaining)

9) Is/are there any other issue(s) that comes to mind when you think about teaching moderate to vigorous physical activities at least 50% of the time in your adapted physical education classes for your students with disabilities?

(1000 characters remaining)

Continue ONLY when finished. You will be unable to return or change your answers.

Continue »

PREVIEW MODE: Responses will NOT be stored.

Demographic Information

10) Gender:

- Male
- Female

11) Age:

[ ] years old

12) Ethnicity:

- White
- Hispanic or Latino
- American Indian and Alaska Native
- Asian American
- African American
- Native Hawaiian and Other Pacific Islander
- Other (please specify):

13) In what STATE do you teach

--Select--

14) District Location:

- Rural
- Suburban
- Urban
- Other (please specify):

15) What is your teaching level? (check all that apply)

- Pre-kindergarten
- Kindergarten
- Elementary
- Middle
- High
- Other (please specify):

16) What are the total number of years taught in education?

[ ] # of years

17) What are the total years of your teaching experience?

[ ] year/month in General Physical Education ONLY

[ ] year/month in Adapted Physical Education ONLY

[ ] year/month in Combination of general and adapted physical education

18) What is your educational level? (check all that apply)

- ☐ Bachelor's
- ☐ Master's
- ☐ Doctorate
- ☐ Other (please specify):

19) Certification (check all that apply):

- ☐ General Physical Education
- ☐ Adapted Physical Education
- ☐ Special Education
- ☐ Other (please specify):

Continue ONLY when finished. You will be unable to return or change your answers.

Continue »

powered by www.psychdata.com

Create Account Sign In

PREVIEW MODE: Responses have NOT been stored.

Intention to Teach Physically Active Adapted Physical Education Classes to Children and Youth

Thank you for your time and input!

Participation is ANONYMOUS and VOLUNTARY and participants can withdraw from participation at any time.

Investigators: Dr. Ron French and Mr. Jaehwa Kim

Telephone: 940-898-2509

E-mail: jkim4@twu.edu

Department: Kinesiology (Adapted Physical Education)

School: Texas Woman's University

For maximum confidentiality, please close this window.

APPENDIX C

Texas Woman's University (TWU) Institutional Review Board Approval

TEXAS WOMAN'S UNIVERSITY
DENTON DALLAS HOUSTON

Institutional Review Board
Office of Research and Sponsored Programs
P.O. Box 425619, Denton, TX 76204-5619
940-898-3378 FAX 940-898-4416
e-mail: IRB@twu.edu

January 14, 2014

Mr. Jaehwa Kim
1201 N. Austin St., Apt. #4
Denton, TX 76201

Dear Mr. Kim:

Re: Intention to Teach Physically Active Adapted Physical Education Classes to Prevent or Reduce Obesity Among Children and Youth With Disabilities (Protocol #: 17582)

The above referenced study has been reviewed by the TWU Institutional Review Board (IRB) and was determined to be exempt from further review.

If applicable, agency approval letters must be submitted to the IRB upon receipt PRIOR to any data collection at that agency. Because a signed consent form is not required for exempt studies, the filing of signatures of participants with the TWU IRB is not necessary.

Any modifications to this study must be submitted for review to the IRB using the Modification Request Form. Additionally, the IRB must be notified immediately of any unanticipated incidents. If you have any questions, please contact the TWU IRB.

Sincerely,

Dr. David Nichols, Co-Chair
Institutional Review Board - Denton

cc. Dr. Charlotte Sanborn, Department of Kinesiology
√Dr. Ron French, Department of Kinesiology
Graduate School

APPENDIX D

Questionnaire in Phase III: Main Study

PREVIEW MODE: Responses will NOT be stored.

Intention to Teach Physically Active General Physical Education and/or Adapted Physical Education Classes for Children and Youth

The return of your completed questionnaire constitutes your informed consent to be a participant in this project.

Prescreening Question

The survey will begin after identifying your teaching subject. Please click the continue button below.

***1)** Please indicate which subject(s) are you currently teaching?

- ○ General Physical Education ONLY
- ○ Adapted Physical Education ONLY
- ○ Combination of both General and Adapted Physical Education
- ○ Other (If not one of these three, select this response)

Continue ONLY when finished. You will be unable to return or change your answers.

Continue »

powered by www.psychdata.com

PREVIEW MODE: Responses will NOT be stored.

Intention to Teach Physically Active Adapted Physical Education Classes for Children and Youth (1)

General Instruction

In the questionnaire you are about to complete, ***please click the answer in the place that best describes your thoughts***.

For example, If you strongly agree that "Teaching moderate to vigorous physical activities at least 50% of the time in adapted physical education improves physical fitness of students with disabilities," then you would place your mark as follows:

- Teaching moderate to vigorous physical activities at least 50% of the time in adapted physical education would improve physical fitness of students with disabilities (*Note*: **if you do not agree or disagree, place your mark in the middle**).

Strongly agree						Strongly disagree
●	○	○	○	○	○	○

- Answer all items - please do not omit any.
- Mark the response that best describes your opinion about each statement.
- Your responses are strictly confidential. This survey is numbered for data processing; and your responses will remain anonymous.
- You are under no obligation to complete this survey.
- The answers you provide will be used only for the purpose of this study.

Questionnaire will begin on a next page, please continue clicking the button below.

Continue ONLY when finished. You will be unable to return or change your answers.

Continue »

PREVIEW MODE: Responses will NOT be stored.

Please read the following information and respond to all the questions related to teaching moderate to vigorous physical activities at least 50% of the time in adapted physical education classes:

All students with and without disabilities are recommended to participate in ***Moderate to Vigorous Physical Activity*** (**MVPA**) ***for at least 50% of the time in adapted physical education classes*** (U.S. Department of Health & Human Services, 2010).

MVPA is defined as follows (Centers for Disease Control and Prevention, 2006):

- **MODERATE** physical activity refers to activities equivalent in intensity to brisk walking, bicycling, or household chores.
- **VIGOROUS** physical activity refers to activities equivalent in intensity to running, fast cycling, fast swimming, or moving heavy loads.

We would like to know about your intention to teach MVPA at least 50% of the time in your adapted physical education classes. *Note*. Intention is defined as an individual's perceived likelihood of performing a behavior.

---

1) I intend to teach MVPA at least 50% of the time in my adapted physical education classes:

Likely							**Unlikely**
○	○	○	○	○	○	○	

2) I would be willing to teach MVPA at least 50% of the time in my adapted physical education classes:

Strongly agree							**Strongly disagree**
○	○	○	○	○	○	○	

What do you think the following individuals would say about you teaching MVPA at least 50% of the time in your adapted physical education classes?

---

3) Classroom teachers think that I should teach MVPA at least 50% of ... etc:

Strongly agree							**Strongly disagree**
○	○	○	○	○	○	○	

4) General physical educators think that I should teach MVPA at least 50% of ... etc:

Strongly agree							**Strongly disagree**
○	○	○	○	○	○	○	

5) Administrators think that I should teach MVPA at least 50% of ... etc:

Strongly agree							**Strongly disagree**
○	○	○	○	○	○	○	

6) My students with disabilities think that I should teach MVPA at least 50% of ... etc:

Strongly agree **Strongly disagree**

:_____: :_____: :_____: :_____: :_____: :_____: :_____:

7) Parents/guardians of students with disabilities think that I should teach MVPA at least 50% of ... etc:

Strongly agree **Strongly disagree**

:_____: :_____: :_____: :_____: :_____: :_____: :_____:

8) Medical personnel (i.e., physician, nurse, physical therapy, and occupational therapy) think that I should teach MVPA at least 50% of ... etc:

Strongly agree **Strongly disagree**

:_____: :_____: :_____: :_____: :_____: :_____: :_____:

To what extent do you agree or disagree with the opinion of these individuals?

9) Generally speaking, I would do what classroom teachers think I should do:

Strongly agree **Strongly disagree**

:_____: :_____: :_____: :_____: :_____: :_____: :_____:

10) Generally speaking, I would do what general physical educators think I should do:

Strongly agree **Strongly disagree**

:_____: :_____: :_____: :_____: :_____: :_____: :_____:

11) Generally speaking, I would do what administrators think I should do:

Strongly agree **Strongly disagree**

:_____: :_____: :_____: :_____: :_____: :_____: :_____:

12) Generally speaking, I would do what my students with disabilities think I should do:

Strongly agree **Strongly disagree**

:_____: :_____: :_____: :_____: :_____: :_____: :_____:

13) Generally speaking, I would do what parents/guardians of students with disabilities think I should do:

Strongly agree **Strongly disagree**

:_____: :_____: :_____: :_____: :_____: :_____: :_____:

14) Generally speaking, I would do what medical personnel (i.e., physician, nurse, physical therapy, and occupational therapy) think I should do:

Strongly agree **Strongly disagree**

:_____: :_____: :_____: :_____: :_____: :_____: :_____:

How much control do you believe you would have in teaching MVPA at least 50% of the time in your adapted physical education classes?

15) If I wanted to, I am CONFIDENT I could teach MVPA at least 50% of the time in my adapted physical education classes:

Strongly agree **Strongly disagree**

:_____: :_____: :_____: :_____: :_____: :_____: :_____:

16) It will NOT be easy for me to teach MVPA at least 50% of the time in my adapted physical education classes:

Strongly agree **Strongly disagree**

:_____: :_____: :_____: :_____: :_____: :_____: :_____:

17) It is mostly up to me whether or not I teach MVPA at least 50% of the time in my adapted physical education classes:

Strongly agree **Strongly disagree**

:_____: :_____: :_____: :_____: :_____: :_____: :_____:

What do you believe will occur if or when you are teaching MVPA at least 50% of the time in your adapted physical education classes?

---

18) Teaching MVPA at least 50% of the time in adapted physical education classes would improve physical fitness (i.e., cardiorespiratory endurance, muscle strength and endurance, flexibility, and Body Mass Index) of students with disabilities:

Strongly agree **Strongly disagree**

:_____: :_____: :_____: :_____: :_____: :_____: :_____:

19) This would lead students with disabilities to a healthier lifestyle:

Strongly agree **Strongly disagree**

:_____: :_____: :_____: :_____: :_____: :_____: :_____:

20) This would increase risk of fatigue, injury, or illness related to students' disabilities:

Strongly agree **Strongly disagree**

:_____: :_____: :_____: :_____: :_____: :_____: :_____:

21) This would increase the purposeful and successful participation of students with disabilities in community and home based activities (e.g., leisure or recreational activities):

Strongly agree **Strongly disagree**

:_____: :_____: :_____: :_____: :_____: :_____: :_____:

22) This would increase the amount of time on goals and objectives related to physical activities on an IEP of students with disabilities:

Strongly agree **Strongly disagree**

:_____: :_____: :_____: :_____: :_____: :_____: :_____:

23) This would influence the affective domain (i.e., attitude, self-esteem, and emotion) of students with disabilities:

Strongly agree **Strongly disagree**

:_____: :_____: :_____: :_____: :_____: :_____: :_____:

What value, if any, would teaching MVPA at least 50% of the time in your adapted physical education classes provide students with

disabilities?

---

24) Improving physical fitness of students with disabilities would be:

Extremely valuable **Extremely worthless**

○ ○ ○ ○ ○ ○ ○

:_____: :_____: :_____: :_____: :_____: :_____: :_____:

25) Leading students with disabilities to a healthier lifestyle would be:

Extremely valuable **Extremely worthless**

○ ○ ○ ○ ○ ○ ○

:_____: :_____: :_____: :_____: :_____: :_____: :_____:

26) Increasing risk of fatigue, injury, or illness related to students' disabilities would be:

Extremely valuable **Extremely worthless**

○ ○ ○ ○ ○ ○ ○

:_____: :_____: :_____: :_____: :_____: :_____: :_____:

27) Promoting the transition of students with disabilities to community based physical activities would be:

Extremely valuable **Extremely worthless**

○ ○ ○ ○ ○ ○ ○

:_____: :_____: :_____: :_____: :_____: :_____: :_____:

28) Increasing the amount of time on goals and objectives related to physical activities on an IEP of students with disabilities would be:

Extremely valuable **Extremely worthless**

○ ○ ○ ○ ○ ○ ○

:_____: :_____: :_____: :_____: :_____: :_____: :_____:

29) Influencing the affective domain (i.e., attitude, self-esteem, and emotion) of students with disabilities would be:

Extremely valuable **Extremely worthless**

○ ○ ○ ○ ○ ○ ○

:_____: :_____: :_____: :_____: :_____: :_____: :_____:

Questionnaire will continue on a next page. Please click the "Continue" button below.

Continue ONLY when finished. You will be unable to return or change your answers.

Continue »

PREVIEW MODE: Responses will NOT be stored.

What do you think significant people (e.g., family, friends) in your life would expect of you when it comes to teaching MVPA at least 50% of the time in your adapted physical education classes?

30) Most people who are important to me think that I should teach MVPA at least 50% of the time in my adapted physical education classes:

Strongly agree **Strongly disagree**

31) People who are important to me would want me to teach MVPA at least 50% of the time in my adapted physical education classes:

Strongly agree **Strongly disagree**

Tell us your opinion about teaching MVPA at least 50% of the time in your adapted physical education classes.

32) Teaching MVPA at least 50% of the time in my adapted physical education classes would be:

Extremely beneficial **Extremely harmful**

33) Teaching MVPA at least 50% of the time in my adapted physical education classes would be:

Extremely good **Extremely bad**

34) Teaching MVPA at least 50% of the time in my adapted physical education classes would be:

Extremely useful **Extremely worthless**

What factors are present when you teach MVPA at least 50% of the time in your adapted physical education classes?

35) There is a lack of equipment for teaching MVPA at least 50% of the time in my adapted physical education classes:

Strongly agree **Strongly disagree**

36) There is insufficient support from staff and parents when teaching MVPA at least 50% of the time in my adapted physical education classes:

Strongly agree **Strongly disagree**

37) Students with disabilities have physical and cognitive limitations in performing MVPA:

Strongly agree **Strongly disagree**

38) Students with disabilities have lack of motivation and negative attitude toward MVPA:

Strongly agree **Strongly disagree**

39) Environmental settings (i.e., space, safety, gym availability) are inappropriate for teaching MVPA at least 50% of the class time:

Strongly agree **Strongly disagree**

40) There is a lack of effective teaching strategies (i.e., class structure, routines, game, music, and warm-up) when teaching MVPA at least 50% of the class time:

Strongly agree **Strongly disagree**

What conditions affect your ability to teach MVPA at least 50% of the time in your adapted physical education classes?

41) A lack of equipment would make it DIFFICULT for me to teach MVPA at least 50% of ... etc:

Strongly agree **Strongly disagree**

42) A lack of support from school staff and parents would make it DIFFICULT for me to teach MVPA at least 50% of ... etc:

Strongly agree **Strongly disagree**

43) Students' physical and cognitive limitations related to disabilities would make it DIFFICULT for me to teach MVPA at least 50% of ... etc:

Strongly agree **Strongly disagree**

44) Students' lack of motivation and negative attitude would make it DIFFICULT for me to teach MVPA at least 50% of ... etc:

Strongly agree **Strongly disagree**

45) Inappropriate environmental settings (i.e., space, safety, gym availability) would make it DIFFICULT for me to teach MVPA at least 50% of ... etc:

Strongly agree **Strongly disagree**

46) A lack of effective teaching strategies (i.e., class structure, routines, game, music, and warm-up) would make it DIFFICULT for me to teach MVPA at least 50% of ... etc:

Strongly agree **Strongly disagree**

:_____: :_____: :_____: :_____: :_____: :_____: :_____:

Questionnaire will continue on a next page. Please click the "Continue" button below.

Continue ONLY when finished. You will be unable to return or change your answers.

Continue »

powered by www.psychdata.com

PREVIEW MODE: Responses will NOT be stored.

You've completed the main portion of the questionnaire. We now would like to know information about you.

47) Gender:

- Female
- Male

48) Age:

[ ] Age in years

49) Ethnicity:

- White/Caucasian
- Hispanic or Latino
- American Indian and Alaska Native
- Asian American
- African American
- Native Hawaiian and Other Pacific Islander
- Other (please specify)

50) In what STATE do you teach?

--Select--

51) What is your teaching level? (Check all that apply)

- Pre-kindergarten
- Kindergarten
- Elementary
- Middle
- High
- Other (please specify)

52) How many years have you taught adapted physical education and/or general physical education?

[ ] # of years in adapted physical education

[ ] # of years in general physical education

53) What is your highest educational level that you have achieved? (Check all that apply)

- Bachelor's
- Master's
- Doctorate
- Other (please specify)

54) What certification/licensure do you have? (Check all that apply)

- General Physical Education
- Adapted Physical Education
- Special Education
- Other (please specify)

55) Are there any problems in taking the questionnaire? or any comments related to the present topic? Please let us know.

(1000 characters remaining)

Questionnaire will continue on a next page. Please click the "Continue" button below.

Continue ONLY when finished. You will be unable to return or change your answers.

Continue »

powered by www.psychdata.com

Create Account Sign In

PREVIEW MODE: Responses have NOT been stored.

Intention to Teach Physically Active Adapted Physical Education Classes for Children and Youth (1)

This is the end of the questionnaire.
Thank you for your time and help.

Please contact if you have any questions or concerns.

Email: jkim4@twu.edu

Phone: 940-898-2509

Mr. Jaehwa Kim, Dr. Ron French, Dr. Lisa Silliman,

Adapted Physical Education, Kinesiology

Texas Woman's University

Dr. Young Hoon Kim,

Hospitality and Tourism Management

University of North Texas

For maximum confidentiality, please close this window.

APPENDIX E

Content Expert Review Comments

Content Experts Review Comments

Content	Review	Decision	Comments
Cover letter	It is always better to start/begin with university name than your name: e.g., see my master student's introduction. It is not necessary to address your name in front…The Hospitality and Tourism Management Program at University of North Texas is conducting a survey on the subject, "Multi-unit Manager's Perception on Training Programs in the casual-dining restaurant industry." We are asking for your help and cooperation in this collaborative research project. Your input is very valuable and we greatly appreciate your time and answers in this survey.	Accepted	Using institute name may look more professional and increase return rates.
Cover letter	Please do change the sentence, "you are fully qualified for this research since you are…" it is very different tone…	Accepted	
Cover letter	My chair… --> Please do not use "Chair": he is your chair but not to them	Accepted	No more chair
Cover letter	You may have any format but it would be better if you can provide any contact person of IRB: see example, If you have any questions or concerns about the nature of this study, please contact Dr. Young Hoon Kim, at 1 (940) 565-4786 or e-mail to younghoon.kim@unt.edu. If you have any questions about your treatment as a human subject in this study, you may contact Boyd Herndon, Director of Research Compliance, Office of Research & Economic Development, University of North Texas, 1155 Union Circle #310979, Denton, TX 76203-5017, (940) 565-3941. Thank you for considering helping in this research.	Not accepted	Original version of the phases was good enough to provide information the reviewer requested.
Instr.	Not sure whether it is necessary to address all these basic training session for participants. It may be annoying….	Not accepted	

(Continued)

Instr.	It's confusing because it looks like you want us to agree or disagree with weather in the arctic. Can you say if you were asked if the weather in the arctic is cold rather than saying you are asking about weather in the arctic.	Accepted	Changed to the suggested phrase.
Item 46	Simply, Gender? (also the other demographic item)	Accepted	
Item 48	Should it be White/Caucasian? Maybe, too many choices? Can we reduce to 3-4? Then, you can provide "others _____(Be specific)"	Accepted	
Item 50	Maybe, you have to say "which subject(s) are you currently teaching?" It can be multiple choices…general physical education and others…	Accepted	What subject currently do you teach
Item 51	Just checking…is it so important to differentiate Pre-K from K? --> Use 1st, 2nd, and 3rd?	Not accepted	
Item 52	Only year(s)? What about year and month? I don't know…	Not accepted	
Item 53	What about associate with certificate in pre-K or K…I don't know…is it possible?	Not accepted	

Note. Instr = instruction.

Adapted Physical Educator Review Comments

Content	Review	Decision	Comments
Subjective norm box	What exactly to you mean by significant people. Family, friends, spouses? They wouldn't expect me to. After 17 years, they still don't really get what I do	Not accepted	
Perceived behavior control box	Don't really understand what you mean about control. In my district, APE is a service. It is not a special class. I work on the students' goals and activities to develop those goals. If I don't do it no one will. And again, a majority of my students can't participate in moderate to vigorous physical activities.	Not accepted	
Item 18	I only see some of my students 2, 3, or 4 times a 6 weeks. I cannot provide a healthy lifestyle. It's as if you think I teach special APE classes daily	Not accepted	
Item 19	There was one question (#19) where I understood what you were trying to say, but wonder if there is a better way to word the question. Maybe….Increase risk of fatigue, injury, or illness related to the disability of students with disabilities would be…….	Accepted	
Item 19	Question 19 doesn't make sense to me.	Accepted	
Item 20	I am not a personal trainer. Being physically fit doesn't mean you are able to throw a ball accurately to a target with a mature pattern		
Item 22	I would use another word for "worthless". This word does not seem appropriate. Maybe Extremely Valuable to "No Value" or "least valuable"? Worthless seems harsh.	Accepted	
Item 28	You should add an "I don't know" because I don't know	Not accepted	
Item 30	If we don't, we lose our jobs	Not Accepted	
Item 32	Parent/s guardians should be a part the decision process	Not Accepted	
Item 34	Always follow DOCTORS orders and restrictions. PTs OTs can give good info but they are not a doctor	Not Accepted	

(Continued)

Item 40	Should have an N/A. I have structure, routines, games, music, warm-up but not moderate to vigorous physical activities	Not accepted
General comment	At times questionnaire was easy to understand but sometimes it became confusing and may have affected me answer. The questions seemed overlap at times.	Accepted

Doctoral Student Review Comments

Content	Review	Decision	Comments
Cover letter	Dear General/Adapted Physical Educator --> Dear General Physical Educator and/or Adapted Physical Educator (change it throughout)	Accepted	
Cover letter	This purpose does not make sense or is not directive enough.	Accepted	Clarified
Cover letter	Your participation in completing the study is voluntary … --> Your participation in completing the study is voluntary. When completing the survey you may stop and return to complete the survey at any time	Accepted	Switched
Cover letter	After paragraph 2, state something about providing consent.	Accepted	Provided
Cover letter	Is this the purpose because it doesn't match the above purpose statement?	Accepted	Clarified
Cover letter	Change this	Not accepted	Reviewer does not specify the reasons why this should be changed.
Cover letter	Thank you for taking the time to assist me in my educational endeavors. --> Thank you for your time and attention	Accepted	Simple and the same meaning.
Title	How is intention defined???	Accepted	The definition of intention is written out.
Instr.	Provide more direct instructions instead of an abstract examples that does not relate to the survey	Accepted	Changed to the example that is similar to the one in the actual questionnaire.
Instr.	After confidential --> Or anonymous?	Accepted	Added
Instr.	You may stop the survey…. --> I would not state this unless you don't mind them not completing it; will you use incomplete questionnaire data?	Not accepted	

(Continued)

Instr.	The answers you provide will be used only for the purposes…. --> Is there more than one purpose?	Accepted	
Instr.	Please read the following information and respond to all the questions related to teaching moderate to vigorous physical activities at least 50% … --> This statement does not make sense	Not accepted	
Intention box	First, we would like to know about your intention… --> How is intention defined?	Accepted	
Intention box	Is it necessary to address each term (e.g., attitude, subjective norm...) here?	Not accepted	
Item 1	Maybe we can use MVPA instead of moderate to vigorous physical activities because we spell out earlier?	Accepted	
Attitude box	What about placing this before intention?	Not accepted	Item will be random order
Item 3	I may not clarify the differences between beneficial, good, and useful. It may differ in our psychological aspects.	Accepted	
Item 3	Questions 3, 4 & 5 seem to ask same/similar question. More variation needed? (beneficial vs good vs useful)	Not accepted	
Subjective norm box	…significant people in your life --> I think I would use a different word, professional environment or something like that.	Not accepted	Item is intended to ask general life of an individual.
Subjective norm box	Tell us what you think significant people in your life would expect of you when it comes… --> What would expectation information provide?	Not accepted	
Item 6	Means the supervisor	Not accepted	
Item 7	Question 7 seems very similar to Question 6. (should vs want)	Not accepted	It is supposed to be
Item 9	Would not instead of will not	Not accepted	
Item 9	Isn't this question just the opposite of the above question?	Not accepted	
Item 10	It is mostly UP To me whether…	Accepted	
Item 10	Reword or change CAPS in sentence	Accepted	

(Continued)

Item 10	“To” does not need to be capitalized.	Accepted	
Behavioral belief box	Tell us what you believe will occur if you were to teach… --> Aren’t these teachers already teaching 50%??	Accepted	Used 'if and/or when'
Item 11 to 13	~~~> lead students with disabilities to a healthier lifestyle: --> “…” lead students with disabilities to a healthier lifestyle:	Accepted	
Item 11	The sentence after ‘would’ Move to the next line	Not accepted	
Item 11	…class time would ~~~> What is this for? Use : instead	Accepted	
Item 11	Each time whole sentence (throughout the items that uses the same format ~~~>)	Not accepted	
Item 13	Have an influence or influence the affect domain	Accepted	
Item 14	This does not makes sense or flow with the previous part of the sentence	Not accepted	
Item 14	A little lost. You mean that engaging in MVPA programs (e.g., higher attendance and improvement of physical fitness) helps students disabilities participate afterschool activities such as community sports and home based activities?	Not accepted	
Item 16	Some of these questions are negative based some are positive; I would make them all the same	Not accepted	
Behavioral belief (Outcome eval.)	Seems like this statement has a tone to it.	Not accepted	
Behavioral belief (Outcome eval.)	What if any value would there be in teaching moderate to vigorous physical … --> What value, if any, would teaching moderate to vigorous physical activities at least 50% of the time in your adapted physical education classes provide students with disabilities	Accepted	
Item 17	Does not flow with the above statement; rewrite	Not accepted	
Item 20	#20 and #16 are the same question?	Accepted	
Item 20	I am a little confused by this question. Not sure this question fits in this section.	Accepted	

(Continued)

Item 21	For example? Because improvement of muscle endurance, students got employed in some workplace which requires long-time standing position. Something like that?	Accepted	
Item 21	Transition to a community workout facility? Job transition? Maybe more specific here.	Accepted	
Item 21	Transition of what?	Accepted	
Item 21	Generally speaking of course it is valuable but I don't my having any moderate to vigorous activity level in my "classes" creates it	Accepted	
Item 22	#22 and #13 are the same? Maybe need more instructions for participants to know in what perspective to answer.	Not accepted	
Item 22	Wording		
Item 24	Add the following think that I should teach moderate to vigorous physical activities at least 50% of the time in my adapted physical education classes	Accepted	
Normative box	Tell us the extent you agree with doing what these people think you should do --> To what extent do you agree with the opinion of these people think you should do	Accepted	
Normative box	You are stating here that they must agree, change to stay unbiased	Accepted	Added Disagree
Control belief box	Now we want to know about factors that are present when… Now think about the factors that are present when …	Not accepted	
Control belief box	Now we want to know about factors that are present when you teach … --> What factors are present when you teach…	Accepted	
Control belief box	…at least 50% of the time in your adapted physical education classes. I would suggest dropping this since you've given them the definition do you have to tell them every time?	Not accepted	It is not redundancy
Item 36	I expect insufficient … There is insufficient… Keep the same wording to assist the reader	Accepted	
Item 37	Should you separate physical vs cognitive? Ask a question for each?	Not accepted	
Item 40	Reword; hard to answer with the word absent in it	Accepted	

(Continued)

Item 40	Are absent when teaching? Question is a bit confusing.	Accepted	
Control belief box	Will these conditions… --> What conditions…	Accepted	
Demographic question	I would maybe put a statement in that says you've completed the main portion the remaining??? Are demographic.	Accepted	
Item 50	What currently do you teach --> What do you currently teach	Accepted	
Item 52	I would split into two questions how many year have you taught general PE; how many years have you taught APE	Accepted	
Item 53	What is your educational level --> What is your highest educational level that you have achieved	Not accepted	
Item 54	Is this a certification (I would think this falls under teaching license)…	Accepted	Added licensure

Note. Instr = instruction, Eval = evaluation.

APPENDIX F

Results of Content Validation

Results of Content Validity

Item #	Expert					CVI Numerator (Number of panelists who rated 3 or 4)	CVI Denominator (Total number of panelists)	CVI
	A	B	C	D	E			
1	4	4	4	4	4	4	4	1.0
2	4	4	4	4	4	4	4	1.0
3	4	4	4	4	4	4	4	1.0
4	4	4	4	4	4	4	4	1.0
5	4	4	4	4	4	4	4	1.0
6	4	4	4	4	4	4	4	1.0
7	4	4	4	4	4	4	4	1.0
8	4	4	4	4	4	4	4	1.0
9	4	4	4	4	4	4	4	1.0
10	4	4	4	4	4	4	4	1.0
11	4	4	4	4	4	4	4	1.0
12	4	4	4	4	4	4	4	1.0
13	4	4	4	4	4	4	4	1.0
14	4	4	4	4	4	4	4	1.0
15	4	4	4	4	4	4	4	1.0
16	4	4	4	4	4	4	4	1.0
17	4	4	4	4	4	4	4	1.0
18	4	4	4	4	4	4	4	1.0
19	4	4	4	4	4	4	4	1.0
20	4	4	4	4	4	4	4	1.0
21	4	4	4	4	4	4	4	1.0
22	4	4	4	4	4	4	4	1.0
23	4	4	4	4	4	4	4	1.0
24	4	4	4	4	4	4	4	1.0
25	4	4	4	4	4	4	4	1.0
26	4	4	4	4	4	4	4	1.0
27	4	4	4	4	4	4	4	1.0
28	4	4	4	4	4	4	4	1.0
29	4	4	4	4	4	4	4	1.0
30	4	4	4	4	4	4	4	1.0
31	4	4	4	4	4	4	4	1.0
32	4	4	4	4	4	4	4	1.0
33	4	4	4	4	4	4	4	1.0
34	4	4	4	4	4	4	4	1.0
35	4	4	4	4	4	4	4	1.0
36	4	4	4	4	4	4	4	1.0

(Continued)

37	4	4	4	4	4	4	4	1.0
38	4	4	4	4	4	4	4	1.0
39	4	4	4	4	4	4	4	1.0
40	4	4	4	4	4	4	4	1.0
41	4	4	4	4	4	4	4	1.0
42	4	4	4	4	4	4	4	1.0
43	4	4	4	4	4	4	4	1.0
44	4	4	4	4	4	4	4	1.0
45	4	4	4	4	4	4	4	1.0
46	4	4	4	4	4	4	4	1.0

Note. CVI = content validity index.

APPENDIX G

Number of the Participants by State

Number of Participants by State

States	Adapted Physical Educators (n = 122)
Alaska	3
Arizona	2
California	17
Florida	1
Georgia	3
Illinois	2
Indiana	1
Kansas	1
Maryland	5
Massachusetts	1
Michigan	4
Minnesota	1
New Jersey	1
New Mexico	1
New York	15
North Carolina	3
North Dakota	1
Ohio	2
Pennsylvania	2
Texas	44
Utah	8
Virginia	2
Data not provided	2